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THE CORRELATION OF PROCTOLOGY AND OTHER SPECIALTIES *

RALPH W. JACKSON, M.D.

FALL RIVER, MASS.

The work of this section covers the diseases of the alimentary tract except the first part, which is covered by an older one than ours, viz., the Section on Stomatology. There is left to us to handle the pathologic conditions from the esophagus to the anus. As most men practice gastro-enterology, it is a medical specialty, and their surgical work is referred to general surgeons, which is probably as it should be. But as the problems of the first portion of the tract are essentially surgical, so also are those of the last part. Like stomatology, proctology has many problems that have little to do with gastro-enterology, and I wish to maintain the thesis that proctology is far more than the tag end of gastro-enterology.

As a proctologist I have little quarrel with others of that name, except so far as some may belittle what is my concept of true proctology; viz, infrapelvic and intrapelvic rather than suprapelvic work. Let every man reach as far upward in the tract as he wishes in his personal practice, but let him not underrate that part of it which alone has made proctology a worthwhile specialty, and done a lot of good to humanity which it never received and is not now receiving from the general profession. There are enough good abdominal surgeons, whose work the proctologist cannot surpass; but there are not nearly enough good proctologists, and in that field he can do work which the general profession dislikes, neglects and often makes a sad mess of.

The irregulars were the first to recognize this fact, and ever since have made good use of it, commercially at least. First appeared the itinerant quack, and he has been succeeded by the more modern advertising proctologist or firm of proctologists, all successful financially and claiming results (often justified) not attained by the general profession; and by the peripatetic teacher of wonderful proctologic secrets, who gathers into his classes physicians of more or less shady repute, and imparts to them, for substantial consideration, therapeutic methods, which, on investigation, prove to be absurd or commonplace, and never anything not well within the knowledge of the well trained legitimate proctologist.

Only twenty-five years ago a small number of regular practitioners, recognizing this condition and disgusted with it, banded themselves together to awaken the profession to the need of better proctologic work in its own ranks. No mercenary motive prompted these men, led by Joseph M. Mathews, a past president of the American Medical Association, and a few others; and the success of the organization which they formed has been notable but not adequate to accomplish all of their great purpose. If the formation of the Section on Gastro-Enterology and Proctology meant anything, one of the most significant things was the recognition of proctology as a legitimate specialty by the representative organization of the American medical profession.

Recognition of the specialty should be followed by acceptance of the fact by every one interested in the section, and by effort on his part to increase rather than lessen the percentage, so far all too small, of proctologic papers. The American Medical Association should and does stand for the elevation of every department of medicine, but will not continue to do so for proctology without such effort. The continual appearance of a goodly number of high standard proctologic papers on the programs and their publication in THE JOURNAL and section Transactions should lead to more widespread teaching, now shamefully small, in the medical schools; to more general organization of proctologic services in hospitals, to be manned by the better taught graduates of the schools; to a betterment of the often pitiful work turned out by the hospitals; and to a lessening of the necessity for the laity, when informed that there is such a legitimate specialty and when in need of real proctologic help, to resort to notorious irregulars.

Much of the work which the proctologist does and does better because of his specialization is but little related to other lines of work, and of this enough has been written; yet much of it is related to other lines, and of this not enough has been written, and of how he may help other specialists. The intimate relation of proctology to gastro-enterology is obvious to all of us and needs no discussion here, but its frequent and at times intricate relations with other specialties are not so obvious. It seemed to me that a review of some of these relations would be worth while, and might arouse the profession to a keener recognition of such complications and better treatment of them. But before the correlations are considered specifically, something should be said of how and through what avenues they all occur, which are found mostly in anatomic proximity, in blood and lymphatic channels, and in neural connections.

The pelvic floor, consisting of the fascia, the levator ani muscle, the sphincters of the anus and vulva guarding the openings therein, and the underlying fat of the ischiorectal and adjacent spaces, has to support the urogenital organs as well as the rectum, and resist the downward forces of gravity and intra-abdominal pres-

* Chairman's address, read before the Section on Gastro-Enterology and Proctology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, May, 1925.

sure. Weakness of this floor, whether congenital, acquired or traumatic, explains much of the inseparable relationship between rectal and gyneco-obstetric and genito-urinary pathologic changes in the female. The absolute juxtaposition of the rectum with the urethra, prostate, bladder and seminal vesicles explains much of the latter relationship in the male. In either sex the nearness of the hip and sacro-iliac joints and pelvic bones, prone to disease, and the tendency of purulent drainage therefrom to seek an outlet into or near the anus and the rectum, explains some of the confusing orthopedic complications we sometimes see.

Most of the blood supply of the rectum and internal hemorrhoidal plexus is derived from the terminal branches of the inferior mesenteric artery, and the blood is returned therefrom through the portal system and the liver before entering the general circulation, which accounts for the well grounded belief that hepatic and cholecystic pathologic conditions occasionally originate in material transmissible through the vessels from hemorrhoids and suppurative processes in the anorectal region. The middle hemorrhoidal artery may arise from the hypogastric, the internal iliac or even the prostatic artery, and supplies chiefly the levators. The inferior hemorrhoidal artery arises from the internal pudic and supplies the ischiorectal spaces, the sphincters and the external anal structures. The middle sacral arises from the bifurcation of the aorta and supplies a little of the posterior surface of the rectum. The last three of these arteries anastomose to some extent with one another and with the superior hemorrhoidal, but, unlike the latter, return their blood directly into the general circulation through the corresponding veins, which, higher in the pelvis or back, may anastomose with the circulation to other structures, which accounts for the possible transmission of the infection and emboli from the anorectal region to those structures.

The lymphatics of the rectum and anus follow somewhat imperfectly the triple blood supply (disregarding as unimportant the middle sacral). Those arising from the middle and upper rectum follow the course of the inferior hemorrhoidal and inferior mesenteric vein, and these, together with a chain arising between the rectum and sacrum and extending up between the folds of the mesentery in front of the spine, explain the upward and not downward spread of malignancy and other infections of the rectum to the liver and retroperitoneal glands. Except that they are of lower origin, these processes are similar to those which have been pretty well worked out with regard to the appendix. The middle lymphatic system follows closely the course of the corresponding hemorrhoidal veins, which is not true of the inferior system. The latter is very rich about the anus and surrounding skin, and drains chiefly into the inguinal glands, which explains the usual spread of malignancy and other infections of the anus, and the infrequency of upward spread. These anatomic facts of the blood and lymphatic systems, the constant presence of vicious micro-organisms in the rectum, and the frequency and sometimes obscurity of fistulous and other infectious processes in the anorectal region explain the possibility of general focal infection, leading to arthritis and other pathologic changes. There is good reason to believe that this is often overlooked or never even thought of.

The neural supply of the rectum, including the internal sphincter, is chiefly sympathetic and comes from the mesenteric, sacral and hypogastric plexuses, and is therefore involuntary. But the supply of the muscular apparatus and skin of the anus comes from the cerebrospinal system through the sacral and internal pudic nerves, and is therefore voluntary and contains both sensory and motor filaments. The centers controlling the outlets of the rectum and bladder are situated in the cord probably about at the level of the first lumbar vertebra, which synaptic relation accounts for much of the frequent association of anal and vesical symptoms. The inhibitory centers of both are of course in the brain and of unknown location. This whole sensory apparatus is hyperexcitable and capable of causing astounding reflex results in distant organs and on the general nervous balance.

GYNECOLOGY

Obstetric injuries, especially of the perineum, concern proctology even more than gynecology. Certainly this is true of complete laceration and loss of fecal control. Illustrative of this is a recent operation by an excellent surgeon with a beautiful gynecologic result, but with persistent incontinence in the patient, because the sphincter ends had not been brought together. I reoperated, with restoration of control and of the patient to the possibility of again mingling in society. An abnormally deep culdesac of Douglas, a congenital defect, may be responsible for or aggravate genital and rectal prolapse, either or both. In one case, which I reported with others some years ago, I operated on and cured a badly prolapsed rectum without closing this sac, but promptly got an enormous posterior vaginal hernia, which then required a Moschcowitz operation to cure. Rectovaginal fistula, more or less serious according to the obliquity of the sinus, is quite as much a proctologic as a gynecologic problem. It is debatable how much obstructive constipation may be caused by retropositions of the uterus, yet I have seen cases in which some method of shortening the round ligaments has relieved the constipation too decidedly to leave any doubt of the possibility. Ovarian conditions possibly do the same. The anorectal region partakes in the general hyperemia that exists during menstruation, and actual pathologic changes there, particularly hemorrhoids, may be aggravated, or symptoms without much actual disease may be produced temporarily. The necessity for proctologic intervention may be lessened or avoided by gynecologic relief.

UROLOGY

In urology, the intimate relationship between the neural controls of the rectum and bladder comes into play. I am constantly seeing patients, without discoverable anorectal pathologic changes but with disagreeable proctologic symptoms, which originate in the prostate and bladder and are relieved only by attention to those organs. Conversely, genito-urinary symptoms are often due to conditions in the anus and rectum, and are relieved only by attention to those organs. One sees the possibility of this relation in the frequent, though temporary, bladder disturbance following extensive anorectal operations. What of perineo-urethral, recto-urethral, rectovesical and rectocystic fistulas? Rare, to be sure, but originating usually in the genito-urinary passages and becoming as much proctologic as urologic problems. What of the occasional serious results of intrarectal prostatic massage, that panacea of the urologist for everything prostatic? Illustrative of this was the case of a man treated by this method by an excellent urologist, in which the trauma in the

anus undoubtedly opened the way for infection, leading to one of the worst ischiorectal abscesses it has ever been my fortune to handle; and such trauma is not so rare, though the effects may not be so serious.

PEDIATRICS

Pediatric proctology is not a large field, but the diseases that come under this heading are important. This is true of the fairly common imperforate anus, and congenital rectovaginal fistula, both notoriously difficult and unsatisfactory for operation; and more true of the very common anorectal prolapse in children, in which the necessity for operation is in direct ratio to the ignorance and poverty of the parents. My clinic work has brought me considerable of this, and taught me that the simplest, as well as harmless, operation of introducing a bronze wire sphincter about the anus brings the best result and avoids the fussy care necessary to obtain a cure without it and almost impossible among the poor. The wire may remain for months and has to be removed eventually, but the prolapse is then cured, and the pediatrician has been saved a deal of worry.

ORTHOPEDICS

I have been so situated that I have seen perhaps more than my share of the possible correlation of proctology with orthopedics. Some years ago, a case was referred to me, which, so far as I know, is the only one of the kind that has ever been reported. A young man with chronic tuberculous hip disease had developed a most complicated anorectal fistula. Stereoscopic roentgenographic studies of the sinuses with bismuth paste demonstrated that a septic process had started from the anterior surface of the joint capsule, followed the sheath of the iliopsoas upward under Poupart's ligament into the iliac fossa, there forming an abscess; had then gravitated downward above the levator and ruptured into the rectal ampulla, and had also penetrated the levator, traversed the ischiorectal fossa and ruptured externally. Though this had been the course of the original infection to the rectum, it was my suspicion that a retrograde infection from that organ, through the same sinuses, was keeping up the hip disease; and this suspicion was apparently confirmed by the fact that operation on and cure of the proctologic condition cleared up for good the orthopedic condition. Another exactly similar case, with the same result, has been under my care within the last two years. Another illustrative case is that of a lawyer with a definite arthritis of the lumbar spine and some vague rectal symptoms, which proved to be due to a small blind internal fistula. Drainage of this promptly put a stop to the spinal disease, a plain case of focal infection. Furthermore, the course of chronic backache, so often puzzling as to etiology, is frequently to be found in rectal and intestinal conditions, and corrected by correction of them.

DERMATOLOGY

The relation of proctology to dermatology becomes apparent sometimes in venereal manifestations, but most commonly in pruritus ani. Patients with the latter seek both the dermatologist and the proctologist, and I have obtained the best results in this most obstinate, and sometimes almost crazing, form of itching by cooperative work with dermatologists. When proctologic methods, topical, surgical and other, have failed, theirs often have succeeded, and vice versa. In this connection one must not overlook the elaborate study of this disease, made in a monograph published a year ago, which shows the possible correlation of pruritus with visceral conditions as causative factors, as well as the dermatologic problems appearing in the treatment. The author's interesting study of the neural connections which allow misreference of symptoms to the anus from other organs is suggestive of the equal possibility through the same connections of a reverse misreference, and therefore explanatory of some gastro-enterologic and general medical symptoms, which have been found to clear up with proctologic treatment.

NEUROLOGY

We might think of neurology as one of the less likely relations, yet no class of symptoms, unless it be genito-urinary, produces more profound effects on the nervous and mental condition of the patient than does proctologic discomfort. The hypersensitiveness of the anorectal region has already been mentioned, and we have many proofs of the results produced through neural connections. I am constantly seeing patients with some degree of neurasthenia which is traceable to sphincteric hypertension and spasm, in whom systematic dilation of the anus, and in the more extreme cases incision, gives prompt relief. Such an instance was that of a clergyman with an ensemble of nervous and physical symptoms nearly incapacitating him from application to his work. This was coupled with a vague but persistent tenesmus, and he was speedily and entirely relieved by dilation. The sphincteric spasticity and agonizing pain growing out of a tiny anal fissure is merely an aggravated form of the same thing. This is often not recognized by the general practitioner, and has led to almost suicidal mania. Rarely neurologic results come from proctologic disease conditions through other than neural connections. Illustrative of this was the case of a club restaurant waiter, who had developed a spasticataxic gait, general myoclonus and other symptoms involving both lower extremities. He had been examined by an excellent neurologist, who diagnosed a transverse myelitis involving the cord up to the level of the fourth sacral roots, and felt that, in the lack of other apparent cause, it was in some way due to a history which the patient gave of prolonged anal bleeding at the time of the inception of the neural symptoms. I was asked to examine him and found marked internal hemorrhoids, on which I did a radical operation. He had been in a serious condition, but there was immediate improvement and eventual complete recovery. The neurologist has reported the case as one of extreme rarity, and his conclusion was that the cord changes were probably nutritional, the result of the free anastomoses between the hemorrhoidal and spinal venous systems, and blocking of the latter by emboli from the former; or possibly of infection transmitted through the same channel. It would seem that this conclusion can hardly be gainsaid.

TUBERCULOSIS

The relation of anorectal abscess and fistula to pulmonary and other tuberculous processes is well recognized. Sanatoriums for the tuberculous, the country over, keep poor records of their proctologic complications, pay too little attention to them, and do not give their patients the relief from them which a good proctologist could give. The fear which the authorities have of meddling with such complications is entirely unjustified.

I have purposely not gone afield from my own experiences in what has been said, for every proctologist

has had the same. Much more might have been said in detail and elaborate case reports given, but these have no place in a presiding officer's address. What I have reviewed is, however, enough to call to our minds the intimate correlation of proctology with other specialties, which we do not always associate therewith.

245 Cherry Street.

THE ROSE BENGAL TEST FOR LIVER FUNCTION

STUDIES ON THE RATE OF ELIMINATION FROM THE CIRCULATION IN MAN *

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In a previous paper we [1] suggested the use of rose bengal as a test for total liver function. Further observations have confirmed our earlier conclusions, and lead us to believe that, in rose bengal, we have a dye that has advantages over other dyes, so far studied, in estimating the gross functional capacity of the liver.

The various tests that have been devised for the study of separate functions of the liver have been far from satisfactory. Among these should be included the levulose test for carbohydrate function; urobilinogen tests in the urine; fibrinogen tests of the blood; determinations of the lipolytic and fibrinolytic ferments of the blood; studies of the protein metabolism, and the hemoclastic test. Recent studies on the bile pigment metabolism suggest that estimations of the bile pigments in the blood serum may be of value when used alone or in conjunction with other tests. The use of such dyes as methylene blue, congo red and indigocarmin as tests for gross function of the liver has been more or less abandoned. Dyes of the phthalein series have been widely studied, but the recent method of Rosenthal [2] in estimating the rate of disappearance of the dye from the blood stream, after intravenous injection, has proved more satisfactory than previous methods. The dye most extensively studied, phenoltetrachlorphthalein, has certain disadvantages, which limit its use. These have been pointed out by Maurer and Gatewood.[3] In an attempt to overcome some of the difficulties, Rosenthal and White [4] recommended the use of bromsulphalein (disodium phenoltetrabromphthaleinsulphonate). This dye is almost entirely eliminated by the liver, but in cases of retention in the blood stream the dye may be eliminated in the urine from traces up to 20 per cent. of the amount injected. It would appear that bromsulphalein is a more satisfactory dye than phenoltetrachlorphthalein.

In an early report, one of us [5] stated the requirements of an ideal type of dye for the study of liver function: (*a*) the dye must be nontoxic; (*b*) it must be a crystalloid (we know that the fate of colloid dyes in the organism is entirely different from that of the diffusible dyes); (*c*) it must be eliminated from the organism by means of the activity of the liver parenchyma cells, and (*d*) it must remain in the circulation for a sufficient length of time to allow determinations of the dye concentration in the blood plasma to be made. All these requirements are fulfilled with the substance rose bengal (diiodotetrachlorfluorescein of the triphenylmethane series). It is nontoxic in large doses. It is a crystalloid and remains in the normal circulation long enough for determinations to be made.

THE DYE

It has been shown by Schmidt [6] of the department of biochemistry, University of California Medical School, that dyes of the fluorescein series (Table 1) that have six or more halogens are eliminated entirely by way of the bile, while those which contain less than six halogens are eliminated by both the urine and the bile. It is also shown that the fluorescein base and the chlorfluorescein dyes cannot, by any known method, be accurately estimated in either bile or urine because of the color of the dyes. In our experience with rose bengal, both experimental and clinical, we have observed only one instance in which the dye appeared in the urine. In this case there was evidence of marked retention in the blood stream, and only a trace appeared in the urine (possibly a contamination).

No evidence of toxicity of the dye was observed in animals with doses of 100 mg. for a dog weighing 18 kg. In our earlier clinical experience, slight general reactions were noted in a few instances. The reasons for these reactions are not clear, as they have not been observed in our later series of cases.

An interesting characteristic of dyes of the triphenylmethane series is photodynamic activity.[7] Hemolysis of red cells may occur in bright sunlight and in our earlier observations interfered with accurate color readings. As a precautionary measure the blood is now collected and kept until after centrifugalization in a subdued light. The patients are also kept in a darkened room for an hour after the test is completed, to prevent any possible danger from exposure to bright sunlight.

TABLE 1.—*Elimination of Fluorescein Dyes*

Dyes Injected	Time of Appearance After Injection: Bile	Urine
Rose bengal (series)	7-10 minutes	.....
Phloxin (series)	10-12 minutes	.....
Erythrasin (series)	15 minutes	30-40 minutes
Eosin	15 minutes	15 minutes

The technic described below has certain advantages: 1. The patient is subjected to a single puncture of a vein. 2. The actual time of the procedure on the patient is less than ten minutes. 3. The final mathematical result of the test is available in sixty minutes

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* From the Department of Medicine, University of California Medical School.

* Read before the Section on Practice of Medicine at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

* Because of lack of space, this article is abbreviated in THE JOURNAL by the omission of reports of cases. The complete article appears in the Transactions of the Section and in the authors' reprints.

1. Delprat, G. D.; Epstein, N. N., and Kerr, W. J.: A New Liver Function Test: The Elimination of Rose Bengal when Injected into the Circulation of Human Subjects, Arch. Int. Med. **34**: 533-541 (Oct.) 1924.

2. Rosenthal, S. M.: J. Pharmacol. & Exper. Therap. **19**: 385 (June) 1922; Phenoltetrachlorphthalein Test for Hepatic Function: Recent Studies, J. A. M. A. **83**: 1049 (Oct. 4) 1924.

3. Maurer, Siegfried, and Gatewood, L. C.: Phenoltetrachlorphthalein Liver Function Test, J. A. M. A. **84**: 935-939 (March 28) 1925.

4. Rosenthal, S. M., and White, E. C.: Clinical Application of the Bromsulphalein Test for Hepatic Function, J. A. M. A. **84**: 1112-1114 (April 11) 1925.

5. Delprat, G. D.: Studies on Liver Function: Rose Bengal Elimination from the Blood as Influenced by Liver Injury, Arch. Int. Med. **32**: 401-410 (Sept.) 1923.

6. Schmidt, C. L. S.: Personal communication to the authors.

7. Schmidt, C. L. A., and Norman, G. F.: Protection Afforded to Red Cells Against Hemolysis by Eosin, J. Infect. Dis. **27**: 40 (July) 1920; J. Gen. Physiol. **6**: 681 (July) 1922.

from the time of its commencement. The dye is easy to obtain in bulk; it can be sterilized without chemical change and is inexpensive.

TECHNIC

The technic of injection of the dye and the collection of blood samples is exactly the same as that described in our previous paper. A vein in the cubital fossa is selected, and a sample of blood is withdrawn with a

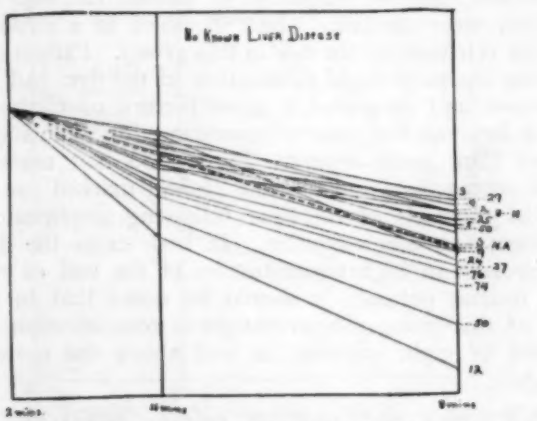

Chart 1.—Curves of patients without known liver disease. The normal average is shown by the broken line.

syringe and discharged into a graduated centrifuge tube containing 2 c.c. of a 2 per cent. solution of potassium oxalate. Without the needle being removed from the vein, either 100 or 150 mg. of the dye, in a sterile 1 per cent. physiologic sodium chlorid solution, is injected and the needle washed out by a further injection of 5 or 10 c.c. of the salt solution. The needle is left in the vein, and at exactly two minutes after the injection of the dye a sample of blood (10 c.c.) is withdrawn from the needle, still in situ, into a fresh syringe, and discharged into another graduated centrifuge tube containing 2 c.c. of oxalate solution. The needle is again washed by injecting 5 or 10 c.c. of physiologic sodium chlorid solution, which maneuver prevents the clotting of blood in the needle. At four and eight minutes, respectively, from the time of injection samples of blood are withdrawn and collected in an identical manner. The needle is then withdrawn from the vein in the arm, and the patient is told to remain in the darkened room for an hour. It is our practice to advise the patient that the appearance of the dye in the stools will impart to them a distinct red color, since the unexpected appearance of the red stools may cause considerable alarm.

As soon as possible after collection, the blood samples are centrifugalized at a speed of 2,000 revolutions per minute for thirty minutes. The percentage of cells and plasma in each tube is then carefully noted. From the samples of blood taken at two, four and eight minutes, respectively, after the time of injection, 3 c.c. of plasma is then diluted in separate tubes with an equal volume of physiologic sodium chlorid solution, and the color of the dye in these solutions is compared in a Helling colorimeter, with a standard solution containing 5 c.c. of plasma from the "control tube"; that is, the same amount of blood withdrawn from the vein before the injection of the dye, and 5 c.c. of an 0.0075 per cent. solution of rose bengal. It is evident that an allowance must be made for the fact that the plasma in the graduated centrifuge tube contains 2 c.c. of potassium oxalate solution, and that some correction of the colorimeter reading must be made to allow for this dilution.

For example: After centrifugalization for thirty minutes, the graduated centrifuge tube contained 4.3 c.c. of cells and 7.0 c.c. of supernatant fluid. The colorimeter reading of the plasma was 25 per cent. of the standard (0.0075 per cent. solution). If this plasma did not contain the 2 c.c. of oxalate, the reading would have been twenty-five times 7.0 divided by 5.0. But the dye that is found in the supernatant 5.0 c.c. of plasma was, before centrifugalizing, in the total 9.3 c.c. of blood. Hence the correction of the colorimeter reading, giving the correct percentage of the dye in the blood stream, is represented by $\frac{25 \times 7.0 \times 5.0}{5.0 \times 9.3}$ (which is 18.8) per cent. of the 0.0075 per cent. solution of rose bengal. After these corrections have been made, we obtain what we have termed "corrected colorimeter readings," such as are found in the charts.

Having obtained the concentration of the dye in the blood sample withdrawn two minutes after the injection of the dye and knowing the total amount of the dye injected into the circulation, it is a matter of simple proportion to calculate the blood volume of the person.

To continue the given example: Two minutes after the injection of 100 mg. of dye into the circulation, the concentration of the dye in the blood was 18.8 per cent. of an 0.0075 per cent. solution of the dye, which is 0.00141 per cent. That is, 100 c.c. of blood contains 1.41 mg. of dye. Therefore, the blood volume of the person into whom this injection was made is $\frac{100 \times 100}{1.41}$ c.c., or 7,092 c.c.

This can readily be reduced for convenience in calculation to the following formula, which differs somewhat from the formula of our first paper:

$$\text{Blood volume} = \frac{\text{Milligrams of dye injected} \times \text{volume of blood withdrawn} \times 10^{6}}{\text{Uncorrected colorimeter reading} \times 0.0075 \times \text{centrifuge tube contents less cell volume}}$$

Since we have injected a uniform amount of dye into persons of different weight and therefore of different blood volumes, it follows that the concentration

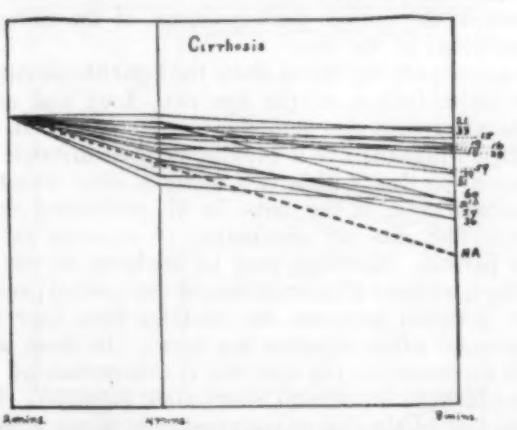

Chart 2.—Curves of patients with suspected or proved cirrhosis of the liver.

of the dye in the blood samples obtained two minutes after injection should show considerable variation, and that it would be impossible to compare the corrected colorimeter readings of different persons with one another unless these readings were reduced to some arbitrary standard blood volume. The standard blood volume selected arbitrarily and purely for convenience for the purpose of this paper is 7,000 c.c. Thus, in the foregoing the corrected colorimetric reading of the

"two minute sample" of blood is 18.8 per cent. of a 0.0075 per cent. solution of the dye, from which the blood volume of 7,070 c.c. can be calculated. If, now, we reduce this to our standard blood volume of 7,000 c.c., it is evident that it is necessary to multiply the reading 18.8 by 7,070 and divide the result by 7,000, which gives 19.1 per cent. of 0.0075 per cent. solution. This figure (19.1) is necessarily a mathematical con-

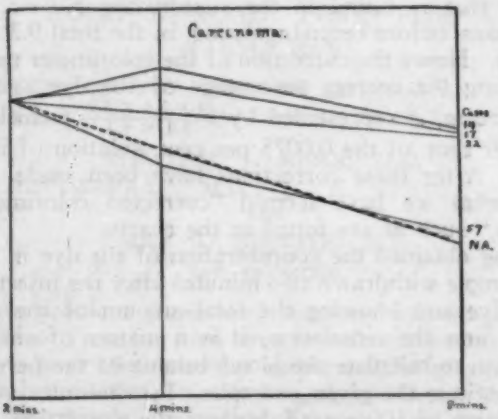

Chart 3.—Carcinoma of the liver or biliary passages.

stant, since it expresses the concentration of a fixed amount of dye (100 mg.) injected into a fixed volume (7,000 c.c.).

Occasionally in large persons we have injected 150 mg. of dye instead of 100 mg., in which case we multiply the reading, which has been reduced to the standard blood volume of 7,000 c.c., by 100 and divide the result by 150, thus standardizing the dosage as well as the blood volume. After these corrections have been made, it is possible to compare the rates of elimination of the dye from the circulation of different persons one with the other. Since the liver is presumably acting on a progressively decreasing amount of dye remaining in the circulation, it would seem correct to use as the ordinates of the curves the logarithms of the different concentrations of the dye.

The accompanying charts show the logarithmic curves of the concentration of the dye two, four and eight minutes after injection into the blood stream. It has been shown that the dye is rapidly diffused through the circulation, so that within two minutes after injection the concentration is the same in all peripheral veins studied. The rate of elimination is constant in the normal person. Readings may be made up to sixteen or eighteen minutes after injection in the normal person, but for practical purposes the readings two, four and eight minutes after injection are taken. In those with marked retention of the dye, the concentration of the dye may be high for several hours after injection. The ultimate fate of the dye in such instances is not known, but it has been suggested by Schmidt [6] that the compound may be changed to one with fewer halogens and pass out through the urine or bile.

PATIENTS WITH NO KNOWN LIVER DISEASE

The curves of seventeen patients with no known liver disease are presented. Chart 1 shows the variations that have been found in this group. It is of interest to note that Cases 3 and 9 were instances of hyperplasia of the thyroid gland and that Patient 29 was suspected of having early cirrhosis of the liver, and is therefore also grouped under that heading. Patient 50, with rapid elimination of the dye, presented pernicious anemia, and Patient 12, with lung abscess and secondary anemia, showed very rapid elimination of the dye from the blood stream. It should be noted that the curves showing the highest concentration of the dye in the blood stream after eight minutes is lower than the lowest figure in known liver disease (cirrhosis).

CIRRHOSIS

Thirteen cases of suspected or proved cirrhosis of the liver were studied. Chart 2 shows in a striking way the retention of the dye in this group. Patient 36, showing the most rapid elimination of the dye, had no symptoms and presented a gross picture of cirrhosis of the liver at the time of operation for gallbladder disease four years before. Patient 33 had marked portal obstruction, and Patient 21 had marked symptoms of cirrhosis of the liver following arsphenamin treatment for latent syphilis. In both cases the dye was present in high concentration at the end of the eight minute period. It should be noted that in all cases of this group the percentage of concentration, at the end of eight minutes, is well above the normal average.

CARCINOMA OF LIVER OR BILIARY PASSAGES

Only four cases of malignant disease of the liver or biliary passages have been studied (Chart 3). In three there was marked retention of the dye, but in only two of these can we state that obstruction of the biliary passages served to prevent the elimination of the dye through the bile. In the third, a diagnosis of carcinoma of the pancreas was made, but we have no data as to concomitant jaundice. In the fourth (Case 57) there was no delay of elimination of the dye, and there was no evidence of biliary obstruction. The ascites was probably due to portal obstruction or peritoneal metastases. We are unable to explain the increase of concentration of the dye in Cases 14 and 17 at the four minute readings. Similar observations with tetrachlor-

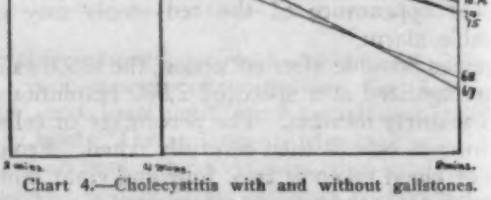

Chart 4.—Cholecystitis with and without gallstones.

phthalein suggest that the dye may be stored up in the tissues and then rapidly discharged to give such results. Possibly there may be changes in the blood volume resulting from the injection of the dye. Errors in making readings in the presence of bile may be a factor, although the standard is made up with plasma and a definite amount of the dye. It was known from experimental work that estimations of the dye concentration in the bile could not be accurately made in the presence of bile pigments.

CHOLECYSTITIS

Chart 4 shows the curves in nine cases of chronic cholecystitis with or without stones. It will be noted that the variations are great as would be expected where there is always a possibility of some degree of associated cirrhosis. Case 4 was one of our earliest cases, and the high concentration at eight minutes may be a technical error. In Case 68, with a rapid elimination of the dye, there had been attacks of jaundice due to stone. Jaundice was present at the time of the test.

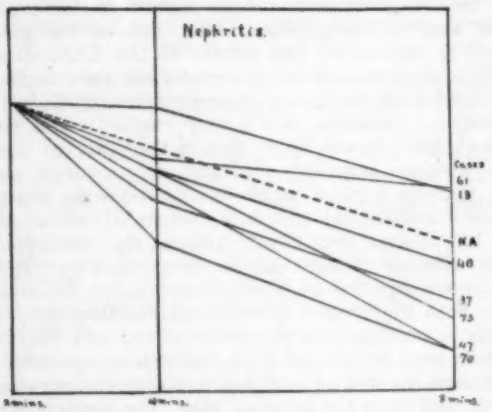

Chart 5.—Nephritis. Rapid elimination of the dye in Cases 47 and 70.

NEPHRITIS

Five cases of renal or cardiorenal disease have been studied and show wide divergence of results (Chart 5). In the main, they follow the normal variations. In Case 47 there was marked cardiovascular-renal disease, with rapid elimination of the dye from the blood stream. After improvement in the general condition, the dye showed a slower rate of elimination (indicated as Case 48). Case 70, presenting advanced nephritis, with a low phenolsulphonephthalein kidney excretion, showed a rapid elimination of rose bengal from the blood stream. A second determination (Case 73) showed also a rapid elimination of the dye. Patient 61 had a delay of elimination of the dye, but had syphilis and a large liver, which may explain the high readings. Patient 13 had probable cirrhosis as well as chronic nephritis. From the striking increased rate of elimination of the dye (rose bengal) in patients with low phenolsulphonephthalein output through the urine in nephritis, it has been suggested by one of us (M. D.) that there is some evidence of reciprocal function of the liver and kidney. Further studies are to be made in cases presenting advanced nephritis.

CONGESTIVE HEART FAILURE

Seven cases presenting congestive heart failure were studied. Chart 6 shows that the curves fall within the normal limits except in Case 69, in which anasarca was extreme. The function of the liver may be slightly impaired in such cases of advanced cardiac failure.

JAUNDICE

A few cases have been studied in which jaundice was the presenting symptom. In those with definite obstruction from tumors or adhesions, the rate of elimination of the dye has been decreased. Two patients with congenital hemolytic icterus showed no delay in the elimination of the dye. Catarrhal jaundice may show a moderate delay in the elimination of the dye, as is shown in Cases 66 and 71. When the condition clears up, the functional test gives a normal curve.

CASES 66 and 71.—Female, aged 43. Jan. 25-Feb. 11, 1925.
C. C. Pain in the back. Nausea and vomiting.
P. I. Began one week before entry with malaise, headache and backache, later chilly sensation. Four days later nausea and vomiting and slight fever. R. B. C., and albumin in urine before entry.
P. E. Obese, slightly jaundiced, quite drowsy woman. Abdomen: Liver and spleen barely palpable.
Lab. Urine: Bile pos.; urobilin pos. Wassermann negative. Slight jaundice.
Liver function test (rose bengal): Five days after entry, 19.1; 17.6; 12.9.
Liver function test (rose bengal): Just before discharge (no jaundice), 19.1; 15.5; 10.6.
Diagnosis: Catarrhal jaundice.

ASCITES

It has been of interest that, in our series, when ascites is an outstanding physical finding the liver function test showed wide variations. When the ascites was due to liver disease with portal obstruction, the dye was retained in the blood stream; in other words, the permeability of the liver for the dye was low. In one case presenting marked congestive heart failure, the dye showed moderate retention. In two cases presenting tuberculous peritonitis and ascites, the function was normal, which was of value in diagnosis. In one case of wide spread carcinomatosis of the liver without jaundice, the function was low.

COMMENT

In a group of fifty-seven cases, selected for the purpose of this report, the rate of elimination of rose bengal from the blood stream has been used as a test for liver function. The dye is eliminated almost entirely from the blood stream through the liver in a comparatively short period of time. It is harmless to the subject in a dose of from 100 to 150 mg. The results in individual cases have been reduced to an arbitrary blood-volume

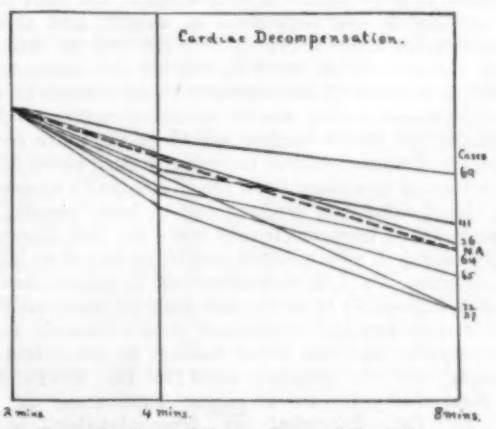

Chart 6.—Congestive heart failure. Curves fall within normal limits.

standard for purposes of comparison. The results in this small group of cases indicate that rose bengal is the most satisfactory dye for the estimation of liver permeability, which may give a test for gross liver function analogous to the phenolsulphonephthalein test for gross kidney function. Any dye that may be eliminated either by way of the urine or by way of bile fails to fulfil the requirements of a test for liver function. It is felt that studies with rose bengal or some similar dye, and simultaneous estimations on the bile pigments

of the blood serum, offer the greatest promise of present day knowledge of the functional capacity of the liver. Obstruction to the biliary passages from any cause naturally gives a retention of the dye in the blood stream, but other methods are available to show the extent of the obstruction. A combination of the foregoing methods, with an estimation of the fibrinogen and lipase functions, may greatly assist in the clinical study of liver disorders.

CONCLUSIONS

1. Further observations confirm our earlier opinions of the value of rose bengal as a test for liver permeability and gross function.

2. The dye fulfils the following requirements (*a*) it is nontoxic in the amounts necessary for the test; (*b*) it is a crystalloid; (*c*) it is eliminated through the liver; (*d*) it remains in the circulation for a sufficient length of time to allow determinations of the dye in the plasma to be made.

3. Patients with definite cirrhosis or other extensive liver disease show a marked retention of the dye in the circulating blood.

4. Obstruction of the biliary passages causes a retention of the dye, but in such cases there are other clinical evidences of obstruction of the biliary passages.

5. In all other cases studied, the curves are within normal limits. The test may be of great value when jaundice and ascites are presenting symptoms.

6. Our observations suggest that there are some reciprocal functions of the liver and the kidneys.

ABSTRACT OF DISCUSSION

Dr. P. D. Lamson, Baltimore: Dr. Kerr's dye has the advantage in liver function tests of not being excreted by the kidneys. His method of making the determination is based on Rosenthal's method of plotting the concentration of dye in the blood at intervals and thus getting the rate of disappearance of dye. Rosenthal injected a given amount of dye per kilogram of body weight on the assumption that the blood volume is proportional to body weight. Dr. Kerr injects a fixed amount of dye regardless of weight, and uses the dye concentration after a two minute interval to determine the blood volume. From these figures all dye concentration is reduced to dilution in an arbitrary blood volume to avoid error in dye concentration due to variation in blood volume. Theoretically, Dr. Kerr's method would be the more correct, but practically I doubt whether the error in such blood volume determinations is less than from Dr. Rosenthal's assumption that the blood volume is proportional to body weight. Dr. Kerr's method can be correct only when the dye injected is completely mixed in two minutes and there has been no loss during this time. As I have pointed out in papers on blood volume, it is impossible to prove that both of these conditions are satisfactorily fulfilled. One must choose between Rosenthal's assumption that the blood volume is proportional to body weight and the possible error in Dr. Kerr's blood volume determination. In a recent publication in The Journal by Dr. Rosenthal on bromsulphalein, a 300 per cent. variation was found in his initial dye concentration in pathologic cases after a five minute period. If these dye concentrations were used to express blood volume, a 300 per cent. variation would be shown which is probably beyond even pathologic variation. One might then feel this variation in dye concentration is an index of dye loss, rather than blood volume change, and of too great importance in giving an index of liver function, to be disregarded. I might suggest as of use in comparing the liver function in different cases the "area method," in which the area subtended by Rosenthal's curves during equal time intervals are compared. This gives a numerical expression of function not absolute but helpful.

Dr. Carl H. Greene, Rochester, Minn.: In the last two years I have made a comparative study of the different tests of the functional efficiency of the liver in a series of more than 700 cases. It was found that the retention of dyes in the blood stream is one of the most satisfactory methods of demonstrating changes in the liver. I believe that there is very little difference in the significance of the various dyes used for this purpose. Phenoltetrachlorphthalein, bromsulphalein and rose bengal, all show essentially the same type of changes. The choice of the dye and the method of notation used for the comparison of results depend on the practical usefulness and on expediency, rather than on fundamental differences in behavior. The results of Dr. Kerr, obtained by the use of rose bengal, are essentially the same as those I have obtained with the use of phenoltetrachlorphthalein and bromsulphalein. Jaundice has a very marked effect on the excretion of dye. It was found that in the different types of jaundice, whether observed clinically or produced experimentally, there is a close parallelism between the degree of dye retention and the changes in the serum bilirubin. As the retained bile leaves the blood stream, the dye retention decreases. Similar changes can be shown in dogs following the intravenous injection of bile. In such cases, the jaundice dominates both the clinical picture and the laboratory findings. This is important in the practical use and interpretation of these tests in patients with obstructive jaundice. The dye test cannot be used as an index to the permanent changes in the liver, and so to the surgical risk. The dye test is most useful in cases of hepatic disease without jaundice. In carcinomatous involvement of the liver, in chronic passive congestion, in the toxemia of pregnancy, and in cirrhosis of whatever origin, the presence of dye retention may be of great diagnostic value. The functional study of the liver is difficult, but the quantitative determination of the serum bilirubin by the method of van den Bergh and the study of dye excretion, as introduced by Rowntree and Rosenthal, have a definite place in clinical medicine.

Dr. William J. Kerr, San Francisco: We felt that we came near enough for clinical purposes and that our method was accurate within 100 c.c. of blood volume. With the patients at rest, there was no perceptible change in the blood volume during the course of the experiments. I was interested in the suggestions made about the use of the area method in charting results. It may be of considerable value. I think that in the work of Rosenthal, in which the first readings were made five minutes after injection, these show a wide variation because the bromsulphalein is eliminated very rapidly, more rapidly than our dye. Dr. Greene brought up the question of the relation of jaundice to the excretion of the dye. Biliary obstruction naturally holds back the dye in the blood stream and gives an apparently low rate of elimination. In regard to the other tests Dr. Greene suggested, we used the modified van den Bergh test for biliary pigments in the blood stream. Dr. Benedict brought up the mathematical question in the method of plotting curves on logarithmic paper. I shall not go into greater detail in the discussion at this time. I think that he is probably correct in his criticism of the use of the method when any clinical method is open to error; but we thought that our results would be more easily comparable if we used this method. By the usual plan of charting, our curves showed rapid fall at the beginning, and then a more gradual fall as the dye was eliminated.

The Blood in Sprue.—There is one much neglected subject for future study in sprue, the blood. Even yet I confess myself unable to make up my mind as to what relation sprue bears to an anemia, pernicious in all but the name, and apt to be associated, as it is, with achylia gastrica. That a large number of cases of sprue end fatally with a blood picture indistinguishable from that of pernicious anemia is incontrovertible. I have blood slides with histories that should be convincing. I wish to record one case of uncomplicated sprue with 512,000 erythrocytes per cubic millimeter and 14 per cent. hemoglobin.—Ashford, B. K.: Sprue, *Ann. Clin. Med.* **4**:13 (July) 1925.

DIAPHRAGMATIC HERNIA

A STUDY OF THREE HUNDRED AND SEVENTY-EIGHT CASES IN WHICH OPERATION WAS PERFORMED *

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This paper is based on the study of 378 cases in which operation was performed, nineteen from the Mayo Clinic,[1] and 359 from the literature. My personal experience is limited to nine cases, in eight of which I had the privilege to operate while at the Mayo Clinic, and one at the Wisconsin General Hospital. This material is studied with especial reference to diagnosis and surgical treatment.

TABLE 1.—*Etiologic Classification of Cases Presented*

Type	Collected Series	Mayo Clinic Series
Congenital	37	7
Acquired	37	7
Traumatic:		
1. Civilian	151	5
2. War injuries	127	..
Indeterminate	26	..
Total	378	19

The collected cases in which operations were performed represent all found in the available literature up to 1924. The presentation of the observations and results of this cumulative experience seems not only justifiable but also desirable from the fact that individual experience with the condition is limited and also because of the occurrence in the literature of a variety of vague and unsupported statements.

Two cases of diaphragmatic hernia, one of traumatic origin, were reported by Ambroise Paré [2] in 1610. Bowditch [3] found eighty-eight reported cases up to 1846. In 1879, Bardenheuer [4] did a colostomy in a patient with acute intestinal obstruction. At necropsy, two days later, a strangulated diaphragmatic hernia was discovered. In 1886, Riolfi [5] reported a cure following repair of a stab wound of the diaphragm through which omentum prolapsed. Naumann,[6] in 1888, operated in a case diagnosed clinically, but he was unable to reduce the herniated stomach, and the patient died. This seems to be the first case of diaphragmatic hernia without prolapse of hernia contents through the chest wall diagnosed clinically, and the first such case in which operation was performed. Walker,[7] in 1889, reported an operative recovery following laparotomy and suture of a rupture in the diaphragm caused by a falling log.

CLASSIFICATION

Diaphragmatic hernia is a transdiaphragmatic evisceration of abdominal contents into the thorax. Etiologically, it may be classified as congenital, traumatic and acquired. Congenital hernias are due to imperfect development of the diaphragm. Traumatic hernias are such as follow penetrating wounds of the diaphragm, as from a knife stab or a bullet, and such as follow crushing injuries that produce rupture of the diaphragm due to greatly increased intra-abdominal pressure. Hernias occurring in the anatomic areas of least resistance, notably at the esophageal ring, may be congenital, or may be of traumatic origin in the sense that an inguinal hernia may be due to trauma; but it seems probable that most hernias in these regions, like inguinal hernias, develop gradually. Such are acquired hernias. Clinically, many cases are difficult to classify. Congenital hernias may remain relatively symptomless until old age, and there may be no symptoms in traumatic hernia until years after the injury has been forgotten. Furthermore, even in some cases in which symptoms follow immediately after an injury, it may be difficult to determine whether the trauma or a preexisting congenital or acquired weakened area in the diaphragm was the chief cause. Such cases may be segregated as of indeterminate etiology. The classification of the series is shown in Table 1.

AGE

(*a*) Mayo Clinic series. There were two children in the clinic series aged 5 and 9 years. Two patients were 17, three were in the third decade, nine in the fourth, two in the fifth and one in the seventh.

(*b*) Collected series. The age incidence among the civilian patients, at the time they were operated on, is indicated in Table 2.

It will be noted that the list includes twenty-two children 10 years of age or under, eleven of them 5 years or under. The youngest was a baby of 3½ months. It will also be seen that in a relatively large proportion of the cases of congenital origin the patients had reached adult age. Most patients with large congenital hernia die in infancy, but some reach adult age, as in two cases in the Mayo Clinic series, with congenital absence of half the diaphragm.

TABLE 2.—*Age Incidence and Etiologic Classification of Civilian Patients*

Age	Traumatic	Congenital	Acquired	Indeterminate	Total
Under 1 year	2	3	0	1	6
1 to 5 years	4	3	0	0	7
6 to 10 years	5	3	2	0	9
11 to 20 years	13	12	1	4	30
21 to 30 years	37	6	7	4	54
31 to 40 years	17	4	6	2	29
41 to 50 years	12	1	10	..	23
51 to 60 years	4	2	4	2	12
61 to 70 years	2	0	5	1	8
71 to 80 years	..	1	1	..	2
Not stated	55	3	1	12	71
Total	151	37	37	26	251

SEX

Excluding those cases due to war injuries, 197 cases remain in which the sex was noted. Of these, 155 (78.6 per cent.) were males, and forty-two (21.4 per cent.) females. Of those of congenital nature, twenty-five (67.6 per cent.) were males, and twelve (32.4 per cent.) females. Of those of acquired origin twenty (54 per cent.) were males, and seventeen (46 per cent.) females.

ETIOLOGY

(*a*) Mayo Clinic series. Of the patients considered to have an acquired hernia, one developed symptoms during pregnancy which was terminated by cesarean

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelop.

1. The cases reported from the Mayo Clinic include those previously reported by Beckman, Giffin, Balfour, Carman and Fineman, and Hedblom.
2. Paré, Ambroise: Cited by Bowditch (Footnote 3).
3. Bowditch: A Treatise on Diaphragmatic Hernia, Buffalo M. & S. J. **9**: 11, 65, 1883.
4. Bardenheuer: Berl. klin. Wchnschr. **16**: 135, 1879.
5. Riolfi: Bull. della. Soc. Lancisiana degli. ospedali di Roma; Ref. Centralbl. f. Chir., 1893, p. 873.
6. Naumann, G.: Diaphragmatic Hernia; Laparotomy; Died, Hygica **5**: 524-528, 1888.
7. Walker, E. W.: Diaphragmatic Hernia, Internat. J. Surg., September, 1900; abstr., J. A. M. A. **35**: 778 (Sept. 22) 1900.

section. She had a kyphosis of extreme grade, so that the pregnancy probably resulted in a greatly increased intra-abdominal pressure. In this case and in two others the opening was parasternal (foramen of Morgagni). The opening in one case was anterolateral and

TABLE 3.—*Type of Injury in Traumatic Cases in Mayo Clinic Series*

Type of Injury	Cases
Crush in sitting posture	1
Railroad collision	1
Crush of abdomen by wagon	1
Fall	2
Total	5

in the others at the esophageal hiatus. The symptoms in all these cases were of relatively short duration compared with the age of the patients.

The type of injury in the traumatic cases is shown in Table 3.

The obvious or probable etiology in the hernia of traumatic and acquired origin is shown in Table 4.

TABLE 4.—*Obvious or Probable Etiology of Traumatic and Acquired Hernia in Collected Series*

Traumatic (Civilian)		Traumatic (War Injuries)		Acquired	
Injury	Cases	Injury	Cases	Etiology	Cases
Stab	92	Bullet wound	44	Straining or lifting	6
Crush	15	Shell wound	32	Parturition	3
Gunshot	11	Bayonet wound	2	Fall	1
Wound	9	Not specified	49	Whooping cough	1
Fall	9	Total	127	Not specified	26
Operation for empyema	3			Total	37
Collision	2				
Fractured rib	1				
Not classified	9				
Total	151				

PROBABLE DURATION OF THE HERNIA

(*a*) Mayo Clinic series. Since the duration of the symptoms may not correspond with that of the hernia opening, the duration of the hernia cannot be definitely determined except in case of those of congenital origin and in some of those of traumatic origin. An example of a latent period in the traumatic hernia was a child on whom I operated who had an opening in the dia-

TABLE 5.—*Duration of Symptoms in Collected Series*

Duration	Total	War Trauma	Civilian Trauma	Congenital	Acquired	Indeterminate
Under 24 hours	54	12	42	..	..	..
1 to 7 days	11	4	6	..	1	..
8 days to 5 weeks	9	5	4	..	..	..
6 weeks to 2 months	5	3	2	..	..	..
2½ to 6 months	32	20	8	2	1	1
7 months to 1 year	37	21	14	2	..	..
1 to 2 years	49	27	11	2	7	2
2 to 3 years	30	14	8	4	4	..
3 to 5 years	19	3	4	6	4	2
5 to 10 years	14	5	3	..	6	..
10 to 15 years	12	2	3	4	3	..
15 to 25 years	12	..	1	9	1	1
26 to 72 years	3	..	..	2	1	..
Uncertain	91	11	45	6	9	20
Total	378	127	151	37	37	26

phragm 10 or 12 cm. in diameter, produced by the pressure of a loaded manure spreader twenty-eight months before. The first symptoms developed ten months after the accident. In the other traumatic cases from the Mayo Clinic the symptoms developed at once, but a hernia was not suspected until some time had elapsed. Two patients presented themselves for examination one year after the accident, and three patients three, four, and nine years, respectively, after the accident.

The duration of symptoms in the collected series is shown in Table 5.

It will be noted that the hernia had been present less than twenty-four hours in fifty-four cases, 14.3 per cent., but they were all instances of transdiaphragmatic evisceration of abdominal contents and presented problems as to surgical treatment similar to those of the hernias of longer duration.

CONTENTS OF HERNIA

The organs herniated in the series are shown in Table 6.

The stomach was herniated in 194 cases, the colon in 158, the intestines in fifty-six and the spleen in twenty-four, of the 343 cases in which the hernia content was noted. In one of my cases the hernia was spontaneously reduced at the time of operation.

TABLE 6.—*Organs Herniated*

	Collected Series	Mayo Clinic Series
Stomach	50	7
Stomach and intestines	8	..
Stomach and colon	14	..
Stomach and omentum	31	..
Stomach and spleen	2	..
Stomach, intestines and colon	3	2
Stomach, intestines and omentum	3	..
Stomach, colon and omentum	45	1
Stomach, omentum and spleen	8	..
Stomach, colon and spleen	3	..
Stomach, intestines and liver	1	..
Stomach, omentum and liver	3	..
Stomach, colon, intestines and omentum	13	..
Stomach, colon, omentum and spleen	2	..
Stomach, intestines, colon, omentum and spleen	6	..
Stomach, intestines, colon and pancreas	1	3
Stomach, colon, omentum, spleen and kidney	1	..
Intestines	9	..
Intestines and colon	4	..
Intestines and omentum	7	..
Colon	37	1
Colon and omentum	28	3
Colon, intestines and omentum	1	1
Spleen	1	..
Spleen and omentum	1	..
Omentum	61	1
Not stated	35	..
Total	378	19

A sac was noted to be present in twenty-four cases. In six of these cases the hernias were of congenital origin and in fifteen acquired. In two there was a history of injury. The symptoms in these cases were of rather long duration. The hernia opening was at the esophagus in thirteen and parasternal in six. The sac contained the stomach alone in nine, the colon alone in three, and both stomach and colon with omentum in the others.

SYMPTOMS

The symptoms in diaphragmatic hernia are due chiefly to mechanical interference with the function of the organs herniated in whole or in part and to impairment of respiration and circulation. The variable hernia content accounts in large measure for the wide range and variability of symptoms.

(*a*) Mayo Clinic series. Twelve patients had symptoms referable to the abdomen alone and seven to both abdomen and chest. Of the abdominal symptoms, pain, vomiting, belching and constipation were the most prominent. The pain in some was colicky in character. One patient crawled about the floor for relief. In two the pain was brought on by eating. Hematomesis occurred in several and was the most marked symptom

in two. Persistent belching occurred in four. Dysphagia was present in one. Practically the only symptom in one was obstinate constipation, relieved only by repeated enemas, which produced dyspnea. In two cases, pain referred to the left shoulder, and dyspnea, were the most marked. Two patients described gurgling and rumbling sounds in the chest, and one described a sensation as of the stomach being "lifted up." Two complained of palpitation following exertion and at times a feeling that they were "going to die." The thoracic symptoms may be relatively slight, as in one case in the clinic series in which half of the diaphragm was absent and the pleural cavity full of abdominal viscera. It seems noteworthy that the average duration of symptoms in the hernias of congenital origin was for the most part many years, while most of those in the other groups were of less than three years' duration.

TABLE 7.—*Symptoms in Two Hundred and Twenty-Nine Cases*

Abdominal		Thoracic	
Pain	113	Pain	10
Vomiting	118	Dyspnea	44
Vomiting except when lying in certain position	11	Dysphagia	13
Nausea without vomiting	7	Hemoptysis	5
Symptoms of obstruction	43	Palpitation	9
Constipation	29	Cyanosis	3
Distention	23	Pain in left shoulder	4
Indigestion	20	Hiccup	3
Belching	11	Cough	6
Hematemesis	8		
Distress after food	6		

(*b*) Collected series. The more marked symptoms noted in 229 of the cases reported during the last ten years are given in Table 7.

Periodicity of symptoms, vomiting without nausea, melena, tetany, convulsions, dysphagia in taking liquids but not solids, and anemia were among occasional symptoms noted. A few patients had practically no symptoms.

PHYSICAL SIGNS

(*a*) Mayo Clinic series. Tympany or dulness to percussion over the lower thorax was noted in four of my cases, and heart displacement in three. Splashing or gurgling sounds were heard in four. The physical findings were practically normal in four.

(*b*) Collected series. The more significant physical findings in 100 cases since 1913 in which the findings were recorded are seen in Table 8.

TABLE 8.—*Physical Signs in One Hundred Cases*

Tympany lower thorax	31
Dulness lower thorax	11
Abnormal sounds in thorax	10
Heart displacement	18
Chest asymmetry	7
Scaphoid abdomen	6
Normal findings	12

DIAGNOSIS

The great variability in symptoms and signs, and the considerable number of cases in which they are very slight, account in large measure for the relatively large proportion of cases of late diagnosis and for those in which the diagnosis was made at operation or on the postmortem table.

The cases diagnosed before, during and after operation are indicated in Table 9.

In the differential diagnosis, chief reliance is placed on the roentgen-ray demonstration of the presence of a portion or all of an abdominal viscus above the diaphragm.[8] Excluding the cases first seen when acutely obstructed and so not suitable for such examination, the most common cause for failure to recognize the condition or for late diagnosis is the fact that diaphragmatic hernia is not suspected. In an ordinary plate of the thorax, the shadow produced by a diaphragmatic hernia may be mistaken for eventration of the diaphragm, esophageal diverticulitis, thickened pleura, pleuritic bands, pneumothorax, pulmonary abscess, subphrenic abscess, tumor in the thorax and other conditions. It is only when a diaphragmatic hernia is suspected and roentgen-ray examination is made of the esophagus, stomach and bowel following administration of an opaque solution that these organs may be with certainty recognized as herniated. In cases so examined, failure to make the diagnosis may be due to spontaneous reduction of the hernia at the time of examination, to the fact that the viscus may be so constricted that the opaque solution cannot pass into the herniated portion, or to the fact that it is small or lies behind the heart shadow. Herniation of the omentum only, which occurred in 16 per cent. of this series, or of other solid organs, cannot be recognized with certainty roentgenologically or by any other clinical means, except in case the herniated organs prolapse through the chest wall. Differentiation between diaphragmatic hernia and eventration of the diaphragm is, at times, impossible.

TABLE 9.—*Time of Diagnosis*

Before Operation	Number	Per Cent.
From prolapse of omentum	67	17.7
By roentgen-ray examination	107	28.3
Clinically and roentgenologically	51	13.5
At operation	113	30.0
Post mortem	24	6.3
Uncertain	16	4.2
Total	378	100.0

TABLE 10.—*Site of Hernia in One Hundred and Sixty-Three Patients*

	Total Cases	Per Cent.	Nontraumatic Cases		Clinic Series
			Number	Per Cent.	
Lateral	48	29.4	6	9.7	2
Posterior	22	13.5	8	12.9	2
Anterior	7	4.3	2	3.2	..
Parasternal	6	3.7	6	9.6	3
Central	37	22.7	13	20.9	3
Esophageal	33	20.2	24	38.9	7
Foramen Bodaloque	4	2.5	2	3.2	..
Two openings	3	1.9	..	....	..
Pericardial	1	0.6	1	1.6	..
Entire diaphragm absent	2	1.2	..	....	2
Total	163	100.0	62	100.0	19

Diaphragmatic hernia in most cases impairs health and more or less incapacitates the patient. In a large proportion of cases, 33.3 per cent. in this series, it strangulates, producing gastric or intestinal obstruction that may lead to gangrene and perforation. Operation after obstruction has developed doubles the postoperative mortality. Many cases are on record in which chronic partial obstruction had been present for years and the patient reduced to a living skeleton. Contraindication to operation exists, but, in my opinion, the

INDICATIONS FOR OPERATION

8. Carman, R. D., and Fineman, S.: Roentgenologic Diagnosis of Diaphragmatic Hernia, with Report of Seventeen Cases, Radiology 3: 26-45 (July) 1924.

contraindications have often been overrated in comparison with the incapacitation the hernia produces and with the menace to the patient's life that its presence involves.

TYPE OF OPERATION

(*a*) Mayo Clinic series. Laparotomy was performed in eighteen cases and thoractomy incision in one. A left costal margin incision was used in several.

(*b*) Collected series. In 191 cases, 50.5 per cent. of the combined series, laparotomy was performed, in 111, 29.3 per cent., a thoracotomy, and in 19.3 per cent. some combination of laparotomy and thoracotomy.

SITE OF HERNIA

The site of the hernia as given in 163 patients operated on since 1907 is indicated in Table 10.

It will be noted that in the Mayo Clinic series there were three cases of parasternal hernia. The hernia opening was to the right of the round ligament of the liver, through the right foramen of Morgagni in one, through the left foramen in one, and through both in the third. The hernia sac and contents were in the right pleural cavity in all three. I find in the literature only four similar cases in which operation was performed. In one,[9] there was a hernia through both foramina with omentum in the right, in the other two the hernia was through the left foramen but the hernial sac projected into the right pleural cavity; of these two, one[10] contained the stomach, transverse colon and omentum, and the other[11] contained a loop of strangulated transverse colon. The cases of absence of the diaphragm in the Mayo Clinic series are the only two cases in which operation was performed found in the literature.

TABLE 11.—*Operative Procedure*

	Total	Laparotomy No.	Laparotomy %	Thoracotomy No.	Thoracotomy %	Thoracotomy and Laparotomy No.	Thoracotomy and Laparotomy %
Opening sutured	263	72	49.3	127	89.4	64	86.4
Hernia reduced, opening not sutured	43	31	23.3	6	4.3	3	4.1
Hernia not reduced	35	26	17.8	2	1.4	7	9.5
Hernia not found	21	14	9.6	7	4.9	0	....
Total	362	146	100.0	142	100.0	74	100.0

In one patient on whom I operated, the opening was just to the right of the esophagus, and the pyloric portion of the stomach was herniated into a large sac in the right pleural cavity.

OPERATIVE PROCEDURE

(*a*) Mayo Clinic series. The hernia was reduced and the opening sutured in all except four of the clinic cases. In one patient an ileostomy was done for acute obstruction. The hernia was found later by roentgenologic examination. In a second patient, an old man of 72 with a hernia opening at the esophageal hiatus and a marked kyphosis making exposure very difficult, no attempt was made to suture the opening; but the stomach, which alone had herniated, was sutured to the anterior abdominal wall. A later thoracotomy closure was contemplated, but the patient died of pulmonary embolus the seventeenth day. The other two were the cases of congenital absence of the diaphragm.

(*b*) Collected series. The proportion of the collected cases in which the hernia was found and reduced, and the opening sutured, is indicated in Table 11.

From this table it is seen that the hernia was sutured in 72.6 per cent. of 362 cases, the hernia reduced but the opening not sutured in 11.8 per cent., the hernia not reduced in 9.7 per cent., and the hernia not found in 5.9 per cent. The table further shows that in 146 laparotomy cases the hernia was repaired in 49.3 per cent., while following thoracotomy it was repaired in 89.4 per cent.

The special procedures employed to effect reduction included incising or digital dilation of the hernia ring, passing the stomach tube and puncturing the stomach to collapse it before reduction was possible, splenectomy through thoracic incision, inducing pneumothorax to counteract negative tension, and resection of omentum, leaving the adherent portion of it in the pleural cavity. In cases in which reduction could not be effected an enterostomy was performed in some cases of intestinal obstruction, and gastro-enterostomy in some cases in which an incarcerated portion of the stomach could not be reduced. Repair of the hernia opening impossible to suture was effected by a plastic operation using aponeurotic flaps, and in a few cases by a plastic operation on the thickened pleura and muscles of the thorax. In most of the cases in which direct suture was impossible, an attempt was made to obturate the hernia opening by suturing the adjacent stomach, spleen, liver, omentum or colon into the gap. Inaccessible hernia openings, notably at the esophageal ring, were in many instances left patent, and an attempt was made to fix the stomach in the abdomen by suturing it to the abdominal wall; in some cases this was combined with a gastro-enterostomy.

RESULTS

(*a*) Mayo Clinic series. Fifteen of the nineteen patients recovered from operation. These fifteen patients include the two with congenital absence of the diaphragm, one of whom died one year and the other eight years after operation. Thirteen were well at the time of the last report, from eight months to seventeen years after operation. Four, 21 per cent., died; two within twenty-four hours after operation, of shock, in one case combined with cyanosis; one on the seventeenth day, of pulmonary embolus, and one three and one-half weeks after operation, of peritonitis and purulent pericarditis.

(*b*) Collected series. Of the total of 378 patients, 251, or 66.4 per cent., recovered from the operation. This includes thirty-seven cases in which no attempt was made to suture the hernia opening and five in which the hernia was not reduced. What proportion of the remaining 204 (54 per cent.) were permanently cured is impossible to state, as late results were reported in only a small proportion of the cases. Of twenty-three patients in whom the opening was closed by suturing the stomach, liver, spleen or omentum into it, four died later with symptoms of intestinal obstruction, and in four the hernia was reported to have recurred. One was reported symptom-free at the time of the last report, six months after operation, and one, two years after operation. One of the patients with congenital absence of the diaphragm died a year after operation with symptoms of obstruction. The other died after eight years following a second operation elsewhere.

9. Wallei, E.: Ueber die congenitale Hernia diaphragmatica in Foramen Morgagni und ihre Roentgen Diagnose, Arch. f. klin. Chir. **97**: 952-967, 1912.
10. Mitchell, J. F.: Discussion, Tr. Am. Surg. A. **38**: 623-624, 1920.
11. Fitzmaurice-Kelly: A Case of Double Congenital Diaphragmatic Hernia, Brit. J. Surg. **55**: 302-313, 1921, 1922.

A pleural effusion was the most frequent complication among the patients who survived operation. A nonpurulent effusion was reported in sixteen, and an empyema in nineteen.

The operative mortality is given in Table 12.

MORTALITY

There were 127 deaths, an operative mortality of 33.6 per cent. There were 126 patients with acute obstruction, of whom sixty-seven died, a mortality of 53.1 per cent. In the 252 cases of nonobstruction there were fifty-nine deaths, or 23.4 per cent. In a number of cases it could not be definitely determined from the records whether or not an obstruction was present at the time of operation. If these cases were added to those listed as cases of obstruction, the operative mortality in this group would be considerably increased and that of the nonobstructed group correspondingly reduced.

The mortality according to operative route is given in Table 13.

The operative mortality following laparotomy was 42.9 per cent. But if the cases of obstruction are excluded, it was twenty-three, or 22.3 per cent. The operative mortality following thoracotomy was 19.8 per cent. in both obstruction and nonobstruction. Of

TABLE 12.—*Operative Mortality*

	Obstructed			Nonobstructed			Total		
		Died			Died			Died	
	Number	No.	%	Number	No.	%	Number	No.	%
War trauma	62	24	38.7	65	20	30.7	127	44	34.6
Civilian trauma	33	20	60.6	118	20	16.9	151	41	27.1
Congenital	11	8	72.7	26	10	38.4	37	18	48.6
Acquired	8	4	50.0	29	5	17.2	37	9	24.3
Indeterminate	12	11	91.6	14	4	28.5	26	15	57.7
Total	126	67	53.1	252	59	23.4	378	127	33.6

Obstructed, 33.3 per cent.; nonobstructed, 66.6 per cent.

twenty-three patients operated on by combined laparotomy and thoracotomy, six died, 26.0 per cent., but in none of these cases was there obstruction. In twenty-nine cases in which a thoracotomy was done following an attempt to reduce the hernia by laparotomy, and in some of which a colostomy was done at that time, six of the patients died, 20.6 per cent.; in twelve of these twenty-nine cases there was obstruction. In twenty-one cases in which a laparotomy was done following an ineffective thoracotomy or for abdominal exploration, there were ten deaths, 47.6 per cent.

The mortality following operation on twenty-two children 12 years of age or under was nine deaths, 41 per cent. In two there was obstruction; of these, one case recurred, and one patient died on the table during laparotomy. Of the other twenty patients, eleven were operated on by laparotomy with eight operative recoveries; five were operated on by thoracotomy with three recoveries, and four by combined laparotomy and thoracotomy with one recovery.

CAUSE OF DEATH

The cause of death in relation to operative route is shown in Table 14.

RECURRENCE

(*a*) Mayo Clinic series. The hernia recurred in one of my patients, who had a parasternal hernia and extreme kyphosis. The symptoms of the recurrent hernia were similar to those before operation. The left foramen of Morgagni was found to be from 6 to 8 cm. in diameter as at the first operation. Repair was effected with silk. The patient has been free from symptoms since.

(*b*) Collected series. Eleven recurrences are reported. In two patients there was a second recurrence. In two the hernias were of congenital type, in three acquired and in six of traumatic origin. Six patients were operated on again, with five reported cured.

TABLE 13.—*Mortality in Relation to Operative Route*

	Total			Obstructed			Nonobstructed		
		Died			Died			Died	
	Patients	No.	%	Patients	No.	%	Patients	No.	%
Laparotomy	191	82	42.9	88	59	67.0	103	23	22.3
Thoracotomy	111	22	19.8	15	3	20.0	96	19	19.8
Laparothoracotomy	23	6	26.0	8	0	0.0	15	6	40.0
(1) Laparotomy; (2) Thoracotomy	29	6	20.6	12	2	16.6	17	4	23.5
(1) Thoracotomy (2) Laparotomy	21	10	47.6	2	2	....	19	8	42.1
Not stated	3	2	....	1	1	....	2	0	....
Total	378	127	33.6	126	67	53.1	252	60	23.8

SUMMARY

Three hundred seventy-eight patients with diaphragmatic hernia were operated on, nineteen of whom were from the Mayo Clinic and 359 from the literature. Excluding those hernias due to war injuries, 60.1 per cent. were due to trauma; 14.7 per cent., congenital; 14.8 per cent., acquired, and 10.3 per cent. of indeterminate origin. Twenty-two patients were children under 10 years of age. The duration of the symptoms in the traumatic cases was three years or under in about 80 per cent., while in those of congenital and acquired origin it was more than three years in 54 per cent. In a considerable proportion of those of traumatic origin there was a latent period between the injury and the onset of symptoms of hernia, and in a large proportion months or years elapsed before operation.

The symptoms and signs in diaphragmatic hernia were variable. All the abdominal organs except those in the pelvis were a part of the hernia content in some cases. The stomach was herniated in 194 cases, the colon in 158, the intestines in fifty-six and the spleen in twenty-four. A sac was noted as present in twenty-four. Of abdominal symptoms, pain, vomiting, constipation and distention were most common; of those referred to the thorax, pain, dyspnea and dysphagia were the most frequent.

Tympany and dulness to percussion, heart displacement and splashing and gurgling in the thorax were the most constant physical findings. Not infrequently, the physical findings were very few.

Diagnosis was made on clinical or roentgen-ray findings in 59.5 per cent., at operation in 30 per cent. and at postmortem examination in 6.3 per cent., and it was

TABLE 14.—*Cause of Death and Mortality in Relation to Operative Route*

	Laparotomy	Thoracotomy	Laparotomy Thoracotomy
Shock	38	13	9
Peritonitis	16	0	1
Empyema	3	3	1
Pneumonia	3	1	1
Asphyxia	7	1	..
Embolus	2	..	..
Hemorrhage	1	..	1
Uncertain	12	4	10
Total	82	22	23

uncertain in 4.3 per cent. The diagnosis was made late in the cases eventually recognized.

Laparotomy was performed in 40.3 per cent., thoracotomy in about 39.2 per cent., and some combination of laparotomy and thoracotomy in 20.4 per cent.

The hernia opening was centrally situated in 22.7 per cent., lateral in 29.4 per cent., posterior in 13.5 per cent., at the esophageal hiatus in 20.2 per cent., and variously situated in the remaining cases. There were seven cases, three in the Mayo Clinic series, of parasternal hernia.

The hernia opening was sutured in 72.6 per cent. of 362 cases, was reduced but not sutured in 11.8 per cent., could not be reduced in 9.7 per cent., and was found at necropsy in 5.9 per cent. The hernia was successfully repaired in 49.2 per cent. of 146 cases subjected to laparotomy and in 89.4 per cent. of 142 cases in which the thoracotomy approach was used.

Of the nineteen patients operated on at the Mayo Clinic, fifteen recovered from operation; two with congenital absence of the left diaphragm died one and eight years after operation, and one had a recurrence but has been symptom-free since the second operation. Twelve have remained free from symptoms of recurrence. Four, 21 per cent., died, respectively, of shock, cyanosis, pulmonary embolus and sepsis.

Of the total number, 251 patients (66.4 per cent.) recovered from operation, but in forty-two of these cases no attempt was made to suture the hernia.

The operative mortality in 126 cases of obstruction was 53.1 per cent.; in 252 without obstruction, 23.8 per cent.

The operative mortality, excluding cases of obstruction and those with omentum prolapsed through the chest wall, was 22.3 per cent. following laparotomy, and 19.8 per cent. following thoracotomy.

End-results were reported in only a small percentage of the cases. Of twenty-three patients in whom the opening was closed by suturing an adjacent organ into it, four were reported to have died later of intestinal obstruction, and in four the hernia recurred.

CONCLUSIONS

1. The etiology of diaphragmatic hernia is often obscure, its pathologic anatomy diversified and its clinical manifestations manifold.

2. In about two thirds of the reported civilian patients operated on in whom the etiology could be assigned, the hernias have been due to a penetrating wound or rupture of the diaphragm by sudden greatly increased abdominal pressure; one sixth were congenital and one sixth acquired.

3. A large proportion of the reported cases in which operations were performed were recognized only after symptoms had been present many years. A considerable proportion were unsuspected until discovered at operation, sometimes after a number of previous operations, and some were disclosed at necropsy.

4. The failures to make an early diagnosis were doubtless due in some measure to the variable and uncertain clinical manifestations, but probably for the most part to the fact that the condition was not considered in the differential diagnosis. The history of a penetrating wound of the lower thorax, a crush, a collision or a fall, or the presence of symptoms referable to the abdomen or thorax or both should suggest the possibility of diaphragmatic hernia in every case in which the diagnosis remains in doubt.

5. In the differential diagnosis, chief reliance is to be placed on the roentgen-ray demonstration of an abdominal viscus in the thorax following administration of a meal or enema opaque to the roentgen ray. Failure to demonstrate the hernia roentgenologically may be due to spontaneous temporary reduction, to the failure of the opaque substance to enter the herniated viscus or to the presence of a solid viscus only, such as omentum, in the hernia.

6. In the absence of definite contraindications, an exploratory operation should be performed if diaphragmatic hernia is suspected, and following a positive diagnosis even if the symptoms are slight. In a large proportion of cases obstruction finally develops, and this complication at operation more than doubles the postoperative mortality, limits what may be attempted in the way of repair of the hernia and often necessitates secondary operations.

7. The choice between laparotomy and thoracotomy, in my opinion, depends on the nature of the case. In cases of obstruction in which the cause of the obstruction is in doubt, exploratory laparotomy is indicated. If the hernia opening has been demonstrated to be parasternal, laparotomy furnishes the most direct and practical avenue of approach. In cases due to a recent wound with prolapse of omentum through it, thoracotomy is the most direct approach and may be combined with a transdiaphragmatic exploration for injury to abdominal viscera. In the ordinary cases without obstruction, thoracotomy has yielded a somewhat lower mortality than laparotomy, and successful closure has been effected in a much larger proportion of the cases following thoracotomy than following laparotomy. A combined thoracolaparotomy may be necessary to effect reduction and closure, but such combined operation has resulted in a very considerable increase in operative mortality.

8. In more than 90 per cent. of the patients operated on there was no sac. In such cases the objection to thoracotomy because of operative pneumothorax produced is largely obviated for the reason that an operative pneumothorax is produced also through the laparotomy wound, the moment the hernia is reduced. Furthermore, the presence of abdominal viscera in the pleural cavity for months or years, probably in most cases, results in compensatory changes that increase the normal limit of tolerance to open pneumothorax. In any case the objection to thoracotomy on the grounds of pneumothorax is largely obviated by the use of positive pressure intrapharyngeal insufflation anesthesia, which amply suffices to maintain respiration and to reinflate the lung if it is still expansile.

9. If possible the hernia ring should be sutured. Obturation of the hernia opening with some abdominal viscus is a makeshift that has resulted in a relatively large number of known recurrences. Suturing the stomach to the abdominal wall has proved ineffective in preventing its prolapse, and is of no avail in preventing herniation of other viscera.

10. A few cases of large or recurrent hernia openings have been successfully closed by fascia transplants or muscle plastics. Very large openings, including cases with absence of the diaphragm on the left side, possibly may be closed by a plastic operation following extrapleural thoracoplasty of the lower thoracic wall by extensive rib resection done as a preliminary operation.

Regardless of whether a thoracotomy or a laparotomy has been performed, the air should be aspirated from the pleural cavity after it has been closed. Even if the collapsed lung will not reexpand, the negative tension produced probably in most cases will increase the nega-

tive tension and so increase the respiratory capacity on the opposite side. Atmospheric tension exerted on the mediastinum from the side of the collapsed lung, added to the increased intra-abdominal pressure due to returning the herniated viscera and postoperative distention, may reduce the respiratory capacity beyond the limit of safety.

11. Recurrences following repair of diaphragmatic hernia have been reported in about 5 per cent. of the cases. Most recurrences are probably due to incomplete closure or to tension on the suture line.

12. The operative mortality has been due in large measure to late operation in the presence of obstruction, to shock and to respiratory failure. Early operation before obstruction has occurred, measures to prevent shock and differential pressure anesthesia, and precautions against postoperative respiratory embarrassment should, therefore, greatly reduce it.

13. Operation for diaphragmatic hernia, whether laparotomy or thoracotomy, usually involves the technical consideration and problems of surgical pneumothorax.

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ABSTRACT OF DISCUSSION

DR. LEON T. LEWALD, New York: Dr. Hedblom's paper is one of the most comprehensive papers on this subject that has been presented, and it is particularly valuable because he has classified the cases as to their etiology. Most of the articles have dealt with so-called traumatic hernias. I would stress the question of the congenital hernias, some of which have not been so recognized, particularly cases of congenital absence of the left half of the diaphragm. If one recognizes this condition, I think the selection of the case for operation would depend a good deal on the exact knowledge and on the amount of defect of the diaphragm.

DR. FRANCIS STUART MATHEWS, New York: I have seen two cases of diaphragmatic hernia.

DR. CARL A. HEDBLOM, Madison, Wis.: I should like to emphasize the importance of keeping in mind the possibility of diaphragmatic hernia in the differential diagnosis of abdominal and thoracic disease. The literature contains reports of a relatively large number of cases diagnosed only after symptoms had persisted for many years. A considerable number of cases are reported in which the hernia was finally discovered at operation, sometimes after several operations, following which the symptoms persisted. Many hernias are discovered at necropsy, after death from gastric or intestinal obstruction. If the possibility of diaphragmatic hernia is kept in mind and roentgen-ray examination made following bismuth meal and enema, early diagnosis will be the rule instead of the exception, as it has been up to the present time. I should also like to stress the statement that diaphragmatic hernia calls for surgical repair regardless of where the hernia is situated, provided there are no definite contraindications to operation. Cases occur in which the hernia opening is so large that plastic operations are necessary, but in the great majority of cases the opening can be sutured, and the patient relieved of distressing symptoms and of the danger of acute obstruction with its incident high mortality even following operation.

Relief of Sick by Federal Government.—All organized measures for the relief of the sick and disabled have some public health bearing, but the law of 1798 has especial significance because it was the first one enacted to safeguard the lives and health of any industrial group. Under its provisions any American seaman taken sick or injured while following his calling is entitled to relief in hospitals and dispensaries of the service. These provisions were extended in 1894 to include life-saving crews and lighthouse keepers, all of whom are civil employees of the government.—Kerr, J. W.: *Pub. Health Rep.* **40**:1678 (Aug. 14) 1925.

CHOLECYSTOGRAPHY: ORAL ADMINISTRATION OF SODIUM TETRA-IODOPHENOLPHTHALEIN *

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Soon after we had demonstrated that the gallbladder could be made opaque to the roentgen ray by intravenous injection of various derivatives of phenolphthalein, experiments were begun to determine whether it would not be possible to obtain shadows of the gallbladder after oral administration of these compounds. The oral route offered not only simplicity of administration, but also the avoidance of occasional severe reactions to the intravenous injection of halogenated phenolphthaleins, which a few of our patients were having at that time. Although the reactions to intravenous injection of sodium tetra-iodophenolphthalein, which we are using for cholecystography,[1] are few and of no moment, we have continued oral administration of this compound with increasing satisfaction.

Similarly, other workers have had good results from oral administration of these substances. Menees and Robinson [2] report a series of thirty-two patients who had cholecystograms made after oral administration of sodium tetrabromphenolphthalein in capsules, with the addition of sodium bicarbonate to prevent precipitation of the salt by the hydrochloric acid of the gastric juice. Later, they gave the compound in gelatin capsules hardened by exposure to formaldehyd. They found that the gallbladder could be visualized after the giving of tetrabromphenolphthalein by mouth in all normal patients who retained the drug for more than one hour. None of their patients experienced severe reactions. Whitaker, Milliken and Vogt [3] report the oral administration of sodium tetra-iodophenolphthalein to forty-four persons. Twenty-seven of these patients had no toxic symptoms, and the symptoms of the remaining patients were slight. Gallbladder shadows were obtained in 93 per cent. of the normal subjects.

Palefski [4] has administered sodium tetrabromphenolphthalein in an emulsion of acacia through a duodenal tube, with satisfactory results. Stewart [5] has injected a solution of sodium tetra-iodophenolphthalein into the jejunum through a duodenal tube, without reaction.

Our first attempts to produce shadows of the gallbladder in animals by oral administration of various substances were unsuccessful. The animals usually vomited, and some of them had diarrhea after the giving of the sodium salts of tetrabromphenolphthalein and tetra-iodophenolphthalein in powder form or in

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* From the Departments of Surgery and Radiology, Washington University School of Medicine, and Barnes Hospital.

1. Graham, E. A.; Cole, W. H., and Copher, G. H.: Cholecystography: The Use of Sodium Tetra-Iodophenolphthalein, J. A. M. A. **84**: 1175 (April 18) 1925.
2. Menees, T. O., and Robinson, H. C.: Oral Administration of Sodium Tetrabromphenolphthalein: Preliminary Report, Am. J. Roentgenol. **13**: 368 (April) 1925.
3. Whitaker, L. R.; Milliken, Gibbs; and Vogt, E. C.: The Oral Administration of Sodium Tetra-Iodophenolphthalein for Cholecystography, Surg., Gynec. & Obst. **40**: 847 (June) 1925.
4. Palefski, I. O.: Visualization of the Gallbladder with Sodium Tetrabromphenolphthalein by Oral or Intraduodenal Administration Through the Duodenal Tube, M. J. & Rec. **121**: 474 (April 15) 1925.
5. Stewart, W. H.: Administration of Tetra-Iodophenolphthalein Through Duodenal Tube, Am. J. Roentgenol. **13**: 378 (April) 1925.

aqueous solution through a stomach tube. The hydrochloric acid of the gastric juice precipitated the soluble sodium salts of the phthaleins in the insoluble acid form. We knew, however, that the sodium salts were absorbed from the intestine because we had obtained shadows of the gallbladder after giving them by rectum.[6] Shadows were also obtained after introduction of sodium tetrabromphenolphthalein into the jejunum by laparotomy.

Clinical application of these facts for cholecystography was made by the oral administration of sodium tetrabromphenolphthalein and, later, tetra-iodophenolphthalein in capsules coated with phenyl salicylate. As phenyl salicylate is not digested in the stomach, it reaches the small intestine, where it is usually dissolved, freeing the contents of the capsules for absorption. Tetra-iodophenolphthalein is probably carried to the liver through the portal circulation, where it is excreted in the bile, producing the shadow of the gallbladder in the manner that has been described after intravenous injection.[7]

The dose of sodium tetra-iodophenolphthalein by mouth has averaged 0.07 gm. per kilogram of body weight in man. We have given 5 gm. as the routine dose for an adult. It has been given in capsules or pills coated with phenyl salicylate, containing 1 gm. of sodium tetra-iodophenolphthalein. The dose may be further subdivided into capsules or pills, if desired. The five capsules or pills are taken a few minutes apart in the course of the evening meal near 6:30 p. m. Food is withheld until after films are made at 9 a. m. and 1 p. m. the following day. After these pictures are made, a glass of milk or cup of coffee may be given. Another film of the gallbladder region is made at 5 p. m. and sometimes again at 9 a. m. the next day. The evening meal is eaten as usual. Water may be taken as desired, following ingestion of the drug. The technic of the roentgen-ray exposure is the same as we have described for other cholecystograms.[6] A Buckey diaphragm may or may not be used. Occasionally the phenyl salicylate about the phenolphthalein will not be dissolved in the intestinal tract, and of course then there will not be produced a shadow of the gallbladder. This fact must be borne in mind when a shadow of the gallbladder is not obtained. We hope to eliminate this difficulty soon. Undissolved capsules or pills show in the intestine on films with the density of lead bullets.

The vast majority of patients have no symptoms after taking sodium tetra-iodophenolphthalein by mouth in the manner we have described. We have performed cholecystography in 112 cases after oral administration. Four per cent. of these patients were nauseated and vomited. A few others had mild discomfort. There have been no toxic symptoms attributable to phenyl salicylate.

We are not prepared to give final conclusions on the merits of the oral as compared with the intravenous method of administration of sodium tetra-iodophenolphthalein for cholecystography. So far, the results of oral administration have checked closely with the results from intravenous injection and with operative confirmation. We are still of the opinion, however, that the amount of the substance that reaches the liver is one of the most important features of the procedure,[1] since it is a functional test of the gallbladder as well as a means of visualizing the organ. At present we can be sure that a sufficient quantity of tetra-iodophenolphthalein has reached the liver only after intravenous injection. The reliability of the intravenous route is further enhanced by the denser shadow usually procured by injection. Some accuracy of diagnosis, hence, must be sacrificed if the more simple method of oral administration is used. Our method at present is first to give the patient tetra-iodophenolphthalein sodium by mouth. If a shadow of the gallbladder is not produced and if there is a question of radiologic technic or any other factor, as vomiting, which makes the result doubtful, we confirm the findings by intravenous injection. This is the method that has been recommended recently by Whitaker, Milliken and Vogt.[3]

The shadows of the gallbladder are generally not quite so dense after oral administration as those produced by intravenous injection. The interpretation of the shadows is essentially the same as we presented early in the work of cholecystography.[8]

We have performed cholecystography on a total of 467 hospital and ambulatory patients. A correct diagnosis has been made in 95 per cent. of the cases confirmed by operation. From personal correspondence, conversation, and the rapidly increasing bibliography of the subject,[9] we estimate that several thousand cholecystograms have been safely made at the present time. We have not heard of any deaths. Thirteen per cent. of the last 100 ambulatory cases that have had intravenous injection of sodium tetra-iodophenolphthalein have presented slight reactions of nausea or vomiting. Two per cent. of the patients have vomited and had backache. One patient with myocarditis and low pulse pressure had nausea, vomiting and a considerable fall in blood pressure. We urge caution when injecting patients with a cardiac lesion. All these reactions were transitory.

6. Graham, E. A.; Cole, W. H., and Copher, G. H.: Cholecystography: An Experimental and Clinical Study, J. A. M. A. **84**: 14 (Jan. 3) 1925.

7. Copher, G. H.: Cholecystography: Appearance and Disappearance of the Shadow, J. A. M. A. **84**: 1563 (May 23) 1925.

8. Graham, E. A.; Cole, W. H., and Copher, G. H.: Visualization of the Gallbladder by the Sodium Salt of Tetrabromphenolphthalein, J. A. M. A. **82**: 1777 (May 3) 1924.

9. Graham, E. A., and Cole, W. H.: Roentgenologic Examination of the Gallbladder: Preliminary Report of a New Method Utilizing the Intravenous Injection of Tetrabromphenolphthalein, J. A. M. A. **82**: 613 (Feb. 23) 1924. Graham, E. A.; Cole, W. H., and Copher, G. H.: Roentgenological Visualization of the Gallbladder by the Intravenous Injection of Tetrabromphenolphthalein, Ann. Surg. **80**: 473 (Sept.) 1924; The Roentgenological Visualization of the Gallbladder by the Intravenous Injections of Sodium Tetrabromphenolphthalein, Radiology **4**: 83 (Feb.) 1925; An Experimental and Clinical Study of the Roentgenological Visualization of the Gallbladder by the Use of Various Compounds, J. Missouri M. A. **82**: 40 (Jan.) 1925. Graham, E. A.: Method for Roentgenological Visualization of Gallbladder, Ann. Clin. Med. **3**: 99 (July) 1924. Carman, R. D., and Counseller, V. S.: Radiologic Diagnosis of Cholecystic Disease by Graham Method: Preliminary Report, Tr. Sect. Gastro-Enterol. & Proctol., J. A. M. A., 1924, p. 77; Roentgenologic Diagnosis of Cholecystic Disease with the Aid of the Sodium Salt of Tetrabromphenolphthalein, Am. J. Roentgenol. **12**: 403 (Nov.) 1924. Whitaker, L. R., and Milliken, Gibbs: A Comparison of Sodium Tetrabromphenolphthalein with Sodium Tetra-Iodophenolphthalein in Gallbladder Radiography, Surg., Gynec. & Obst. **40**: 17 (Jan.) 1925. Milliken, Gibbs; and Whitaker, L. R.: The Clinical Use of Sodium Tetra-Iodophenolphthalein in Cholecystography, Surg., Gynec. & Obst. **40**: 646 (May) 1925. Carman, R. D.: Progress in Roentgenological Examination of Gallbladder, editorial, Am. J. Roentgenol. **13**: 165 (Feb.) 1925. Enfield, C. D.: Gallbladder Shadows, Kentucky, M. J. **23**: 100 (Feb.) 1925. Smithies, Frank; and Oleson, R. B.: The Visualization of the Biliary Tract: A New Method by Intravenous Injections of Tetrabromphenolphthalein, Illinois M. J. **47**: 97 (Feb.) 1925. Silverman, D. N., and Menville, L. J.: Observations of the Visualized Gallbladder by Graham Method with Reference to the Effect of Nonsurgical Drainage: Preliminary Report, J. A. M. A. **84**: 416 (Feb. 7) 1925. Moore, Sherwood: Cholecystography After the Method of Graham, Cole and Copher, read before the Midwest Section of the American Roentgen Ray Society, Detroit, Feb. 19, 1925. Baumgartner, E. A., and Jewett, C. H.: Gallbladder Visualization, Clifton M. Bull. **2**, March, 1925. Stewart, W. H.: Further Experience with Tetrabromphenolphthalein Sodium Salt in the Roentgenographic Diagnosis of Gallbladder Disease, Am. J. Roentgenol. **13**: 259 (March) 1925. Winslow, K.: Cholecystography and Diagnosis of Chronic Gallbladder Disease, Northwest Med. **24**: 124 (March) 1925. Ottenberg, Reuben; and Abramson, H. A.: Production of Liver Necrosis by Tetrachlorphenolphthalein and Tetrabromphenolphthalein, J. A. M. A. **84**: 800 (March 14) 1925. Tuffier and Nemours-Auguste: Sur la visibilité de la vésicule biliaire aux rayons x, Presse méd., March 18, 1925; Sur la visibilité de la vésicule biliare, Bull. officiel Soc. d'electrotherap. et de radiol., December, 1924. Gosset, A., and Loewy, G.: Cholecystographie: Epreuve de Graham, Bull. méd., March 21, 1925. Limits of Safety in Administration of Tetrabromphenolphthalein, editorial, Am. J. Roentgenol. **13**: 371 (April) 1925. Cole, W. H.: Relation of Gastric Content to the Physiology of the Common Duct Sphincter, Am. J. Physiol. **72**: 39 (March) 1925.

We wish to add also the fact that we have obtained satisfactory cholecystograms by the use of the somewhat analogous compound, phenoltetra-iodophthalein, which is the eleventh substance we have found experimentally capable of producing cholecystograms.

CONCLUSIONS

1. Successful cholecystograms can be made by oral administration of sodium tetra-iodophenolphthalein and sodium-tetrabromphenolphthalein.
2. Doubtful results of cholecystography following oral administration should at present be confirmed by intravenous injection.
3. Phenoltetra-iodophthalein also produces good cholecystograms.

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LIVEDO RETICULARIS *

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Every dermatologist has observed the peculiar mottling of the skin that sometimes occurs when the body is exposed to the cold. It is so common an occurrence that no attention is paid to it, beyond noting that it is not an early macular syphilid. And yet the phenomenon is not universal—many patients show no such mottling. What is the cause of the difference? It is a question that has not yet been answered, principally because the condition is so transitory and unimportant that very few have given any study to it. The words cutis marmorata and livedo, which have been applied to this condition, are not to be found in the indexes of most of our dermatologies. Mild as it is, this rash is only the first member of a long series, gradually increasing in extent and in severity, constituting, in the more severe cases, a permanent disfigurement. There is an increasing literature on the subject, although very little has been published in this country. Our attention was called to it by two children seen in the outpatient service of the New York Skin and Cancer Hospital, Dec. 28, 1923, and presented before the New York Academy of Medicine, Jan. 2, 1924. The case histories and findings are as follows:

Family History.—The father probably has an arrested pulmonary tuberculosis. The mother's paternal grandmother died of tuberculosis. There was a history of paralysis in the mother's family for at least two generations. There is no history of syphilis, carcinoma, hemophilia, familial epistaxis or nevus formation.

Personal History.—The children are the third and fourth of a family of seven, all the rest of whom are normal, except that one had a lesion at the vertex when born, similar to that occurring in the elder of our patients—the mother describes it as a blood clot, which later disappeared, leaving a scar. The history and the clinical findings in the two cases are so nearly identical that one description will do for both.[1] Birth was normal and unattended, and nothing unusual was observed until 18 months of age, except that the children were rather slow in learning to walk and talk, and dentition was slightly delayed. At that time, the mother noticed a discoloration, which appeared first on the cheeks, and later on the extremities, the trunk being little or not at all affected. At the same time, a persistant diarrhea appeared, and neither symptom had been affected by any treatment, except that the diarrhea could be temporarily controlled by medication. The children were undersize and underweight, but no definite abnormality of the blood or viscera was detected, in spite of repeated, careful examination. Emotionally they were unstable—either listless or very active. The eruption was markedly symmetrical. There were centers of greatest density on both cheeks, free borders of the auricles, tip of the chin, backs of the hands, center of the buttocks, outer surfaces of the upper part of the leg, front of the knees and dorsum of the feet. The eruption consisted of a lilac-pink field made up of irregular areas apparently corresponding to the underlying blood vessels, forming a veritable retiform network, enclosing normal skin areas. The ratio of affected to unaffected appearing skin at the densest points was about 3 to 1; that is, three parts of pink to one of normal skin. The normal lines of the skin were exaggerated. Multitudes of shiny macules were arranged between these lines, each no more than pinhead in size, never raised and not infiltrated. The suggestion of atrophy gained at first glance was not confirmed by closer inspection of areas in which the process seemed at its point of greatest development. From the centers named, the eruption seemed to spread peripherally, losing much of its color, and gaining at points farthest from the center, an inverse ratio of affected to unaffected, 3 to 1; that is, three parts of normal skin to one part of affected skin, until at the merging into normal skin no pink was to be seen at all. Only the lesions on the chest suggested cutis marmorata. Except for a few superficial, visible, engorged capillaries, telangiectasia as ordinarily understood was not a feature of this eruption. Pigmentation was not present. There was no edema and no keratosis. Varicosities were absent. There was no suggestion of the appearance of flat, vascular nevi, nor any bright red puncta like cayenne pepper grains. On stroking or on pressure, all the color disappeared from the lesions and the skin of even the most marked areas seemed entirely normal in texture. When the pressure was removed, the color returned instantly. One hand held above the head and the other down by the side of the patient showed the effect of posture to be that of pressure, for the upper hand was much the paler of the two. On exposure to cold or warmth, on excitement or when crying, the color was much more marked, in that it was darker and gave a bluish tint. The temperature of the affected and nonaffected parts of the skin seemed the same on palpation. The sensation of the skin was normal to touch, pain, heat and cold.

Dec. 8, 1924, Dr. Kretzer of our medical staff reported to us that the diarrhea was controlled by the administration of suprarenal substance. The children were also being given pituitary extract. Dr. Kretzer could see no change in the skin.

We saw the children again, April 15, 1925. The eruption was unchanged. The mother reported that the children did better at school when taking suprarenal substance and pituitary extract than when these drugs were omitted. Examination of a piece of skin removed from the right cheek showed only a flattening of the dermal papillae and rather prominent, small blood vessels of the papillary derma.

We have searched the literature in the endeavor to find a category in which to place these cases, but have been unable to find any description which exactly fits them. A study of the reports has lead us to the following classification, which is offered as a basis for future study.

I. CUTIS MARMORATA

Cutis marmorata is a transitory mottling, which is seen in some patients on exposure of the skin to cold, and consists in the development of a dark network, with lighter interstices. It is probable that there is no pathologic alteration in the peripheral circulatory system in these cases, and that the phenomenon is one of imperfect vasomotor control.

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* From the service of Dr. Williams at the New York Skin and Cancer Hospital.
* Read before the Section on Dermatology and Syphilology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. A more complete history and description will be given in another paper, to be published later.

II. LIVEDO RETICULARIS IDIOPATHICA

The group of livedo reticularis idiopathica differs from the first in that the mottling is not transient but permanent, and also in the enormous variety in the quantity and in the arrangement of the discoloration in the various cases. As a rule, the condition is permanent, but von Lohuizen [2] and Thompson [3] have reported cases that seem to belong in this group and have shown great improvement. As the discoloration in this group is fixed, rather than transient, and varies, if it varies at all, only as a result of changes in position, temperature or similar secondary factors, we must assume a local pathologic condition, although this may be so slight as to elude our search, in some cases. The one constant change that is found in all or nearly all the cases in this group when search has been made for it is vascular dilatation. This is sometimes represented by enlarged vessels full of blood, sometimes by an increase in the capillary network. In other words, the condition is an anomaly of the blood vessels and is usually congenital. In many cases the eruption is not very striking, and no departure from the normal is to be found in any other part of the body. In this class belong the cases reported by Guille,[4] whose first case is discussed also by Jourdanet [5] and by Comby.[6] The patient was a boy, aged 4 years, on whose legs there appeared a livid discoloration forming rings and squares. There were no other abnormalities and treatment was without effect. Jourdanet, who saw the patient, believed that the eruption had been present from birth, and the history of its development at 4 years of age was the result of faulty observation. He states that the livid skin corresponded to the areas of maximum circulation of Renaut [7]—the exact reverse of Comby's description. This is not so contradictory as it sounds, because in other case reports the same patient is said to show livid spots on a pale ground, and livid rings enclosing a pale center, depending on the part of the eruption examined, and we can confirm this observation.

The next year Comby [8] reported a series of twenty-one cases, several of which fall in this group of apparently healthy children suffering from a persistant cutis marmorata; the rest showed various other departures from normal, including congenital syphilis, rickets and malnutrition. Some gave a positive tuberculin reaction and some showed acro-asphyxia.

At the January, 1925, meeting of the New York Dermatological Society, Howard Fox presented a woman, aged 20, apparently in perfect health, except for an acro-asphyxia and a persistent cutis marmorata. The lesion had appeared spontaneously about three years before.

Other cases show more striking changes in the skin, but still with no alteration in the general health, a good example being Pollitzer's [9] case, called by him naevus angiectodes disseminatus. The patient was a man, aged 25, in whom nearly the whole surface was involved from birth. The smallest lesions were bright red or bluish red macules varying from 5 to 15 mm. in diameter, round or irregular in outline, with vaguely marked contours. These patches were most dense over the abdomen, where they formed a close network, and over the thighs, where they formed one unbroken sheet of a bluish red. Histologically, there was dilatation of the capillaries in the papillae and of the subpapillary and subcutaneous plexuses. There was also a deficiency of elastic tissue and hypertrophy of the hair muscles.

Von Lohuizen's [2] case, reported under the name of cutis marmorata teleangiectatica congenita, was equally striking. The subject was a girl, aged 2 weeks, with a discoloration almost universal in its distribution, the only areas of normal skin being a band about 2 cm. broad on each side of the middle line, nose, lips, genitalia, ears, soles and palms; but it was not of quite the same character in all places. It was in part like cutis marmorata, but the pale areas were larger than usual and the network was more distinct and more sharply defined. There were also blue-red spots resembling vascular nevi and a few tortuous veins. Histologic examination showed vacuole formation in the basal and prickle layers, and, in some places, pigment in the basal cells. The only other change noted was the presence in the corium, but not immediately under the epidermis, of numerous blood vessel spaces, mostly of capillary structure, and lined with an endothelial layer. Von Lohuizen believed it to be a congenital defect of development. The child learned to sit up late and walked at 17 months. At 18 months, the lesions were scarcely visible on the face, where from the beginning they had been less conspicuous than elsewhere. A second normal child was born.

In this group also are the two sisters reported by M. Sydney Thompson.[3] Dr. Arthur Whitfield had presented the elder of the two before the Section on Dermatology of the Royal College of Medicine, Feb. 15, 1923. Sister A, born in 1921, was very small. Her cheeks were tense, bright vermilion red, and with a polished surface. In the center of the red area on the cheek was an oval, white patch. On pressure, the color disappeared to a great extent, and revealed a certain amount of nevoid telangiectasia underlying the diffuse redness. The hands were intensely cyanotic and swollen. Practically the whole of the gluteal region was in the same condition as noted in the cheeks. The feet were not affected. The condition was thought to have been congenital, but may have appeared at 1 month of age. A sister born in June, 1923, showed a similar disturbance. The first child of the family of six was said to have been similarly affected. This boy had died at 11 months with convulsions. The eruption in Sister A became more extensive, so that the whole of the cheeks were affected with early changes appearing on both eyebrows, and free edges of the ears. Both arms above the elbows right down to the finger tips showed the same condition, but on the dorsal and extensor aspects only. Extension over the whole gluteal regions and down the thighs to the ankles occurred, but again only on the dorsal and extensor aspects. The knees, however, were wrapped around by the eruption as if by a bandage, the only areas of the body where the internal aspects were affected. The feet were the only regions in which disappearance of the condition had taken place, for at one time even the toes bore these same nevoid telangiectatic spots. The whole of the trunk was absolutely free. The clear area described for the right cheek

2. Von Lohuizen: Ueber eine seltene angeborene Hautanomalie (Cutis marmorata teleangiectatica congenita), Acta Dermat. Ven. 3: 202 (Sept.) 1922.
3. Thompson, M. S.: A Hitherto Undescribed Familial Disease, Brit. J. Dermat., December, 1923.
4. Guille, C.: Etude sur livedo, Thèse de Paris, June 12, 1912.
5. Jourdanet: Le livedo annularis chez l'enfant, Arch. de méd. d. enf. 15: 119, 1912.
6. Comby: Soc. méd. d. Hôp., Dec. 1, 1911, p. 434.
7. Renaut: Dictionnaire encyclopédique des sciences médicoles, 1883, quoted by Adamson (Footnote 11).
8. Comby: La livedo annularis chez l'enfant, Arch. de méd. d. enf. 15: 801 (Nov.) 1912.
9. Pollitzer: Naevus Angiectodes Disseminatus, International Atlas of Rare Skin Diseases, March 22, 1889, No. 42.

had counterparts on the left cheek and on both buttocks. Each showed raised follicles without trace of hyperkeratosis. The tense character of the eruption disappeared. No trace of infiltration was perceptible. Fine wrinkling, such as results from both edema and senility, was seen.

The association of livedo with other defects, which was noted by us, had been observed by Comby [8] and others, and was particularly emphasized by Hess and Kerl.[10] Of the eight cases reported by the latter, Nos. 4, 5, 6 and 7 probably belong in the general group of livedo idiopathica. The eruption varied in extent in the several cases, and some of them presented, besides the livid rings and spots that characterize the eruption, the somewhat paler, transitory mottling of ordinary cutis marmorata. The features of these cases that interested the authors were the absence of syphilis, the absence of any vascular change sufficient to obstruct the circulation, although they report finding numerous dilated veins, and particularly the presence of various signs of defective development, such as projecting ears, facial asymmetry, loose joints, small arteries with feeble pulse, and, in the males, feminine distribution of hair. They conclude, therefore, that the condition is due to an abnormal quality in the skin, as indicated by abnormalities in other organs. Their other patients showed the same changes, and three of them—Nos. 2, 3 and 8, may belong in this class. These cases differ, however, in that in each case there was a definite cause to which the interference with the circulation might be ascribed—in Case 2, the eruption began at the feet, following freezing; in Case 3, it followed nephritis, while Patient 8 had a congenital valvular disease of the heart. These could only be precipitating causes—the vascular defect must already have been in existence. Case 1 belongs in the next section.

III. LIVEDO RETICULARIS SYMPTOMATICA

In the group of livedo reticularis symptomatica there are demonstrable inflammatory changes in the skin, in or around the blood vessels. The commonest class in this group is erythema ab igne, the chronic and persistent mottling of the skin of the legs that sometimes occurs after prolonged exposure to heat, in which passive congestion is followed by inflammatory thickening. As this does not seem an inevitable sequel of exposure to heat, we may perhaps assume in this group, as in all the others, a congenital abnormality.

In another class of cases the livedo is no longer a flat mottling, a mere change of color, but the strands of the net work are in places perceptible to the touch as bands of superficial infiltration, with nodular masses which may be felt either on these thickened bands or scattered along the impalpable parts of the network. Adamson [11] has described a series of six such cases, from one of which he excised a nodule that showed round cell and epitheloid cell infiltration around the blood vessels of the derma. He classes them all as cases of Bazin's disease presenting a livedo-like pattern, and makes the significant comment:

> I am not convinced that persistent and pronounced livedo indicates a special tendency to tuberculosis, but when tuberculides of the type of Bazin's disease occur in patients so affected, the erythema induratum occurs on or maps out the livedo network.

This sentence seems to us to be the key to the whole problem; livedo reticularisis is an anomaly, probably congenital, which may appear spontaneously, or which may be made evident only by an intercurrent disease such as tuberculosis. This intercurrent disease may determine the appearance of livedo by impeding the circulation, as in some of the cases in Class 2; or, if the intercurrent disease itself involves the skin, the presence of the livedo determines the arrangement of the eruption. The first case in the series of Hess and Kerl is a counterpart of those of Adamson—a girl of 17, with erythema induratum on both legs, and presenting also a livedo reticularis, some of the strands of which were brownish and were resistant to the touch. Unna's [12] case may also belong in this group. The patient was a strongly built, well nourished woman who suddenly developed over many parts of the body, especially the legs, arms and back, a blue-gray to blue-violet network, with interstices from 2 to 3 cm. in diameter. At the nodes of the network were black nodules, which sometimes ulcerated and sometimes healed without ulceration. Biopsy showed acute inflammatory changes. Unna interpreted the process as a chronic phlebitis of the skin with multiple necrosis. The cases reported by Kren [13] and by Mijke [14] are probably analogous, but the reports are too sketchy to give an accurate picture. At a meeting of the Vienna Dermatological Society, Ehrmann [15] presented sections from a case of livedo with tuberculosis of the lower extremities, which showed early changes of erythema induratum and endophlebitis. No description of the eruption is given, but the case seems to belong in this group.

Other diseases besides tuberculosis may produce an eruption whose form and arrangement is determined by a preexistent but perhaps unrecognized livedo, and chief of these is syphilis. The credit for calling attention to this class belongs to Ehrmann,[16] although, as pointed out by Adamson, Wilson [17] recorded a case which is probably of this nature. The essential features of Ehrmann's cases are their occurrence in syphilitic subjects, and the demonstration of definite inflammatory changes in the arterioles. Some at least of Ehrmann's cases developed late in life, and he believes the pathologic vascular changes that he observed were the direct cause of the eruption. This may well have been the case. It is quite conceivable that the sluggish current in the areas of reduced circulation favored the deposit of spirochetes in this region, and that the spirochetes so arrested, by their growth-stimulating action, reduced the lumen of the vessels and still further reduced the flow, producing at last a permanent mottling. On the other hand, tertiary syphilis is very common, and only a few of the many patients suffering from it present this eruption: it is more probable, therefore, that a preexistent circulatory anomaly determined the appearance and the arrangement of this particular type of lesion. Other observers have reported cases similar to Ehrmann's, and, when changes in the blood vessels are demonstrable, they belong in the same class with his. Some cases in syphilitic subjects show no demonstrable change in the arteries, which is not surprising. If an apparently healthy subject can develop livedo

10. Hess, L., and Kerl, W.: Ueber die Pathogenese der Livedo racemosa und ihr nachstehender Hautveränderungen, Dermat. Ztschr. **33**: 125, 1921.
11. Adamson: Livedo Reticularis, Brit. J. Dermat. **28**: 281, 1916.
12. Unna, P. G.: Aspixia Reticularis Multiplex, International Atlas of Rare Skin Diseases, 1893, Plate 31, Figs. 2 and 3.
13. Kren: Ztschr. f. Haut. u. Gesch. **5**: 126, 1922.
14. Mijke: Ztschr. f. Haut. u. Gesch. **8**: 123, 1923.
15. Ehrmann, S.: Ztschr. f. Haut. & Gesch. **5**: 127.
16. Ehrmann, S.: Ein neues Gefässymptom bei Lues, Wien. med. Wchnschr. **57**: 777 (April 12) 1907.
17. Wilson, E.: Portraits of Diseases of the Skin, Plate 34.

annularis without perceptible vessel changes, why should not a syphilitic subject do so?

There is still another group presenting cutaneous redness and mottling, in which neither tuberculosis nor syphilis can be demonstrated, and which, on biopsy, show an obliterative endarteritis. Such a case was shown by Stokes[18] in a woman, aged 30, who had suffered from redness and mottling of the extremities, and to a less extent on the back, with attacks of numbness of the lower extremities, for three years. Physical and neurologic examination showed nothing abnormal. The blood Wassermann reaction was negative and the spinal fluid was negative. When 18 months old she had had a very curious case of measles, with suppurative adenitis of the submaxillary lymphatics. Biopsy showed complete endarteritic obliteration of some of the larger arterioles, with less conspicuous endothelial swelling and perivascular infiltration in the smaller capillaries. There was dilatation of other peripheral capillaries. Stokes interprets this dilatation as compensatory: may it not be that the dilatation was the primary condition, which determined the location of the secondary obliterative process?

Our two cases belong to the group of livedo reticularis idiopathica. The discoloration in the two sisters was much more severe than in those reported by Thompson (from Whitfield's service) but not so extensive as in the cases reported by Pollitzer and von Lohuizen. Our patients showed the association of livedo with other marked bodily defects. The important feature, however, is that the body defects enumerated could not be considered as causative for the skin condition. This must not be overlooked in the analysis as given. Our patients walked late, and were poorly developed as compared with their normal brothers and sisters, and with other normal children of the same age. Both had an obstinate diarrhea without inflammatory symptoms. Both were of normal mentality, but somewhat unstable, and either very active or very quiet.

These four cases—Thompson's and our own—to which may possibly be added those of Pollitzer and von Lohuizen, present so many points of similarity and differ so markedly in clinical appearance from the other cases of livedo that they form a distinct group, for which we propose the name livedo telangiectatica. Indeed, the difference in appearance between these cases and ordinary cutis marmorata is so great that at first sight there seems to be little connection between the two; but when one considers the cases of permanent livedo, in some of which the discoloration is very striking, and the absence of any discoverable changes in the skin on microscopic examination, except a dilatation and perhaps an increase in the blood vessels, it seems probable that they all are different phases of the same anomaly.

CONCLUSIONS

1. There is a congenital anomaly of the blood vessels, which in some cases is revealed as a transitory, violaceous mottling on exposure to cold.

2. The same or a similar anomaly may show itself as a permanent mottling, extremely variable both in extent and in severity.

3. This condition may be revealed only when the circulation is impeded by some other agency.

4. This anomaly may govern the distribution of eruptions due to other causes, notably tuberculosis and syphilis, especially when these diseases involve the small blood vessels.

114 East Fifty-Fourth Street.

18. Stokes: Livedo Racemosa, Arch. of Derm. & Syph. 5:781 (June) 1922.

ABSTRACT OF DISCUSSION

DR. JOHN H. STOKES, Philadelphia: The situation is certainly much more clearly stated now than in 1914 when I undertook my study of the problem. Ehrman's own students have brought out the existence of a syphilitic and a non-syphilitic type of livedo racemosa. Dr. Williams now brings forward a type in which not only is there no connection with syphilis, but there is no detectable pathologic change in the vessel walls. In this connection it is worth while to recall Vorner's description of nevus anemicus, which introduced the conception of functional as distinguished from structural nevi. Vessels in nevus anemicus are apparently normal in number, distribution and structure, but the skin affected shows a blanching which is just the reverse of the flush described in Dr. Williams' cases. Nevus anemicus has been observed associated with the functional anomaly of hyperhidrosis in a case reported by Vorner. I have myself reported a nevus apparently of functional type. It is not necessary, therefore, that gross structural change be invariably demonstrated in telangiectatic vascular anomalies. I would emphasize, first, that biopsy for the study of this condition must be deep. Superficial vessels may show no changes, as in the case presented before the Chicago Dermatological Society. Biopsies on the face, on account of cosmetic drawbacks, may not extend deeply enough. I think, too, that studies of vascular fragility and of capillary form in the living subject may assist us in understanding the mechanism of these conditions.

DR. PAUL A. O'LEARY, Rochester, Minn.: Dr. Becker of the Mayo Foundation recently studied six cases of generalized telangiectasia. He believes that the etiologic classification of neurogenous, mechanical or toxic seems to account for all cases. Syphilis plays an insignificant part in the group as a whole. In the patients in whom syphilis was thought to play an etiologic rôle, antisyphilitic treatment offered no improvement. Quite definite causative agents were demonstrated in all the cases, so it is quite possible that the absence of such factors is the result of incomplete examination of the patient, although Dr. Becker found that each of these patients presented several etiologic possibilites.

DR. HERMAN GOODMAN, New York: The more we studied, the less we knew. We tried to account for everything we saw. It was our purpose to find a pathologic basis for the clinical aspects, but we were not always successful. The best we could do was to add a microscopic observation of a macroscopic. Unfortunately, this does not give the biopathologic key. In cases of livedo racemosa, for example, one school of observers believes that every instance has a demonstrable pathologic background. Another school is equally certain that this is not true. In our own studies we were particularly careful to take the skin specimen down to the fascial plane. From the forearm, the specimens were taken very deep. In no section studied by us was there any inflammatory change seen in the skin. The vessels seen were perhaps a little more prominent than vessels from a similar place in the skin from normal persons, but that was all. The significance of the type of lesion described in the two sisters awaits clarification.

DR. CHARLES M. WILLIAMS, New York: Of course, the word idiopathic is a cloak for ignorance, and must be abandoned when all the facts are known. In our cases there was no discoverable cause, except the abnormality of the blood vessels. The point which we wish to emphasize is the existence of a group of cases characterized, clinically, by congestion or dilatation of the blood vessels, and dependent, apparently, on a faulty development of the blood vessels themselves.

BILATERAL LUMBAR SYMPATHETIC NEURECTOMY IN THE TREATMENT OF MALIGNANT HYPERTENSION

REPORT OF CASE *

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AND
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ROCHESTER, MINN.

Malignant hypertension affects persons in the prime of life, by preference men with a drive, who have attained success at the expense of their vascular systems. In some instances, such hypertension develops from a benign form, while in others it is malignant in type, almost from its inception; the latter type has constituted approximately 10 per cent. of the total number of cases in our hospital experience. The cause of the disease is unknown; the course is stormy and rapid; the prognosis is extremely grave, and the medical treatment is entirely unsatisfactory.

The clinical symptoms are: (1) marked and continuous elevation of systolic blood pressure and disproportionately high diastolic pressure; (2) cerebral manifestations—that is, excruciating dull headaches, intermittent or continuous in character, affecting as a rule the entire cranium, but centering especially in the occiput—insomnia, irritability and mental deterioration, changes in personality and at times apoplectic or epileptiform seizures; (3) loss of visual acuity secondary to neuroretinitis and consecutive to hypertensive changes in the retinal vessels, constriction, spasm, hemorrhages and so forth; (4) gastro-intestinal disturbances, especially epigastric discomfort, and nausea and vomiting; (5) cardiac changes, enlargement and at times dilatation with its accompanying train of symptoms; (6) involvement of kidney, nocturia, albuminuria, cylindruria and sometimes eventual renal insufficiency, and (7) asthenia, which may be the outstanding feature. So striking are the cerebral features that brain tumor is sometimes diagnosed. The extent to which cerebral cardiac and renal manifestations participate probably depends on the relative involvement of the vessels to those organs. Death results, in order of frequency, from cerebral vascular accidents, from cardiac failure and then from renal insufficiency. The course of the disease is rarely longer than two years, during which time the patient, as a rule, suffers intensely from headache, visual disturbances or manifestations of cardiorenal vascular disease, and is largely incapacitated for work.

Treatment has included rest, relaxation, diversion, protection from strain, dietary regulations, hydrotherapy, and the administration of nerve sedatives and of vasodilator drugs. Once the disease is definitely established, treatment does not check its course; it is palliative rather than curative, retards progress somewhat, and in many instances makes the patient more comfortable. Digitalis proves helpful during periods of cardiac decompensation. Removal of foci, especially of the tonsils, should be undertaken only if definitely indicated, because of the risk in such cases.

Since it has fallen to our lot to treat a great many patients having malignant hypertension with results which are ultimately disappointing, it occurred to us that relative freedom from vascular spasm might be attained through the removal of the vasoconstrictor influence of the sympathetic nerves to the vessels of the leg. It was thought that this might not only lower the systemic blood pressure, but also provide simultaneously an area of diminished resistance which would give way under strain and thereby serve somewhat in the capacity of a safety valve for the protection of the cerebral and retinal vessels. In the erect posture, hydrostatic pressure also should favor the effectiveness of this area of lowered resistance for the protection of vital functions during periods of activity. Consequently, in April, 1924, a patient suffering from severe arteriosclerosis, chronic nephritis and terminal uremia was subjected under local anesthesia to a Leriche-Handley operation on the left femoral artery in Scarpa's triangle. The course of the disease was in no way affected, and no significant effect could be determined relative to general blood pressure or to the pressure in either extremity. But it was felt that the case was hardly suitable for the experiment, since the patient was moribund at the time of operation.

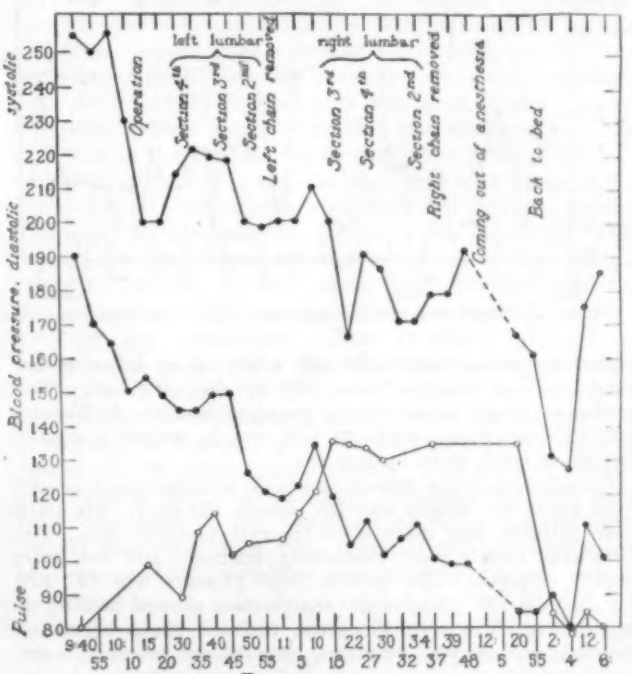

Chart 1.—Blood pressure readings during the course of the operation.

As the vasodilator effects following lumbar sympathetic neurectomy in cases of spastic paraplegia became apparent, a patient with typical advanced malignant hypertension was subjected to bilateral lumbar sympathetic neurectomy (removal of the ganglions with the rami and all the branches and trunks of the second, third and fourth lumbar segments of the sympathetic chain) through a median abdominal incision. This approach was chosen in preference to Royle's lateral approach, because it was decided to remove the lumbar sympathetic ganglions and rami on both sides at one operation, and because better exposure could be obtained by going directly down on the sympathetic chain.

REPORT OF CASE

History.—A man, aged 33, was admitted to the Mayo Clinic, Nov. 10, 1924, complaining of blurring of vision and headache ascribed by local physicians to high blood pressure. The family history was unimportant, except that the mother died from apoplexy. He had had typhoid fever in 1903, acute

* From the Division of Medicine and the Division of Surgery, Mayo Clinic and the Mayo Foundation.

rheumatic fever while in the army in 1917, influenza in 1918, and an attack of indigestion in 1919 which caused him to consult a physician, who informed him of his high blood pressure (systolic, 190). Subsequently his tonsils were removed. In 1920 he felt dazed and depressed for a period of five weeks, and his memory seemed quite faulty at that time. Eight months before examination he began to suffer from occipital headaches, the pain radiating to the vertex and being accompanied by nausea and vomiting, which were worse before breakfast, but usually "wore off" by the afternoon. This headache was almost continuous for eight months. In November, 1924, his vision began to fail, and he noticed gradually increasing blind spots in each eye.

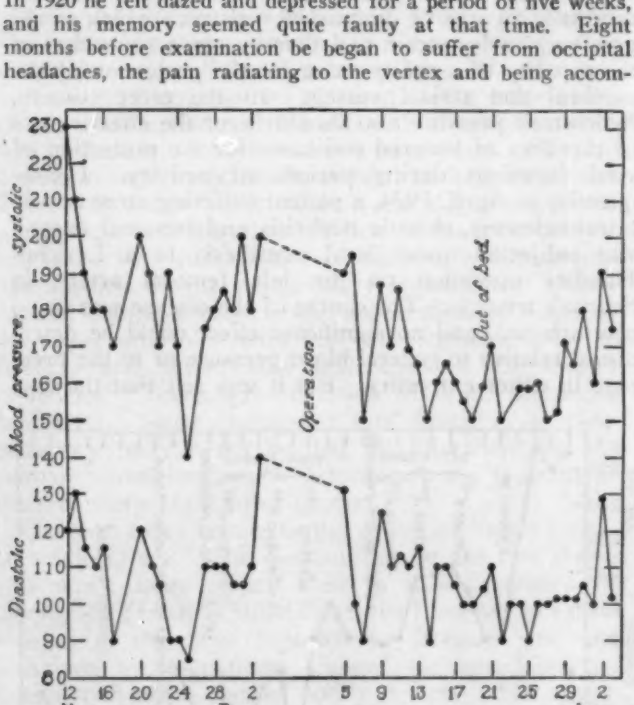

Chart 2.—Blood pressure readings before and after operation.

Examination.—The patient was well nourished and powerfully built; the weight was 185 pounds (84 kg.). Six teeth were infected, and there were bilateral tonsillar tags. The peripheral vessels were moderately sclerosed and the heart slightly enlarged. The systolic blood pressure was 230, and the diastolic 130. Neurologic examination showed nothing of importance. The ophthalmoscope revealed slight edema of the disks, cotton wool exudates, hemorrhages involving especially the left macular region, and general reduction in the size and caliber of the retinal arteries. Repeated urinalysis revealed nothing of interest except slight albuminuria. The phenolsulphonephthalein output in two hours was 70 per cent., and the blood urea and creatinin strictly normal. The hemoglobin was 75 per cent. (Dare); the erythrocytes numbered 4,400,000, and the leukocytes 5,200. The Wassermann reaction on two examinations was negative. The electrocardiogram and roentgenogram of the chest showed no abnormality. The dilution and concentration tests of renal function showed variations in specific gravity of the urine from 1.006 to 1.024, or a slight reduction in dilution capacity. The salt test yielded normal results. The diagnosis was "early malignant hypertension."

Operation and Result.—This case seemed to fall into the group described last year by Wagener and Keith, in which eyeground changes are definite, while the cardiac and renal functions are still practically unimpaired. The patient was admitted to the hospital, but he did not respond at all well to rest, nitrites and warm baths. Because of his age and excellent physical condition aside from this vascular involvement, the possibility of relief by abdominal sympathetic neurectomy was discussed with him. Even recognizing that the operation was, in a sense, entirely experimental, he evidenced great enthusiasm, stating that he was willing to undergo any procedure that offered hope of permanent, or even temporary, relief. During the three weeks of medical treatment in the hospital, his blood pressure continued high, the systolic being from 170 to 200 and the diastolic from 90 to 130, and he complained of marked blurring of vision, headache and weakness.

When the patient arrived in the operating room, the systolic pressure was 255, and the diastolic 190. The blood pressure was followed and recorded during the course of the operation (Chart 1).

The patient recovered without interruption, was in bed for two weeks, and then was up and around the ward on a diet of 2,200 calories with 50 gm. of protein. The blood pressure was noted daily (Chart 2). The day following operation he complained of a sensation of heat and burning in the feet and legs. On examination, the feet were found to be hot, dry and rosy red, especially on the soles and margins. Sweating was abolished. His sensations and the color and appearance of the feet strongly suggested erythromelalgia. Subsequently these manifestations subsided to a large extent, but throughout, to the examining finger, the feet continued to feel decidedly warmer than normal. The skin became dry and finally scaly, and presented an appearance somewhat suggestive of a mild ichthyosis.

Certain observations were made and certain features studied which are of unusual interest. On neurologic examination no changes of great significance in the reflexes were found. However, the patient complained of subjective discomfort, heat, and burning in the feet and legs. In the legs he asserted that he felt heat as pain. Sciatica appeared under rather peculiar circumstances. Heat had been applied in the form of a hot air bath to determine whether sweating could be induced. Whereas, in the upper part of the body, heat induced sweating with normal sensations, in the legs it caused a sensation of actual pain, and there was no sweating. During the course of the hot air bath, on repeating this experiment, the pain became intense. Subsequently it persisted, and eventually the diagnosis of sciatica was made. When the patient was getting up and around, spasms and cramps developed in the calf muscles. These disappeared within a few days, and on dismissal the sensations in the legs were normal except for a feeling of unusual warmth. So great was the patient's conviction that heat had induced the sciatica that he refused absolutely to submit to further studies of this nature.

Calorimetric studies, carried out in the laboratories to determine, if possible, what vasomotor and circulatory changes were induced by this operative procedure, revealed results of unusual interest. An increase of more than 300 per cent. in heat production and radiation was demonstrated by the Stewart-Kegerreis foot calorimeter (Chart 3). This was associated with definite and considerable increase in the surface temperature of the feet.

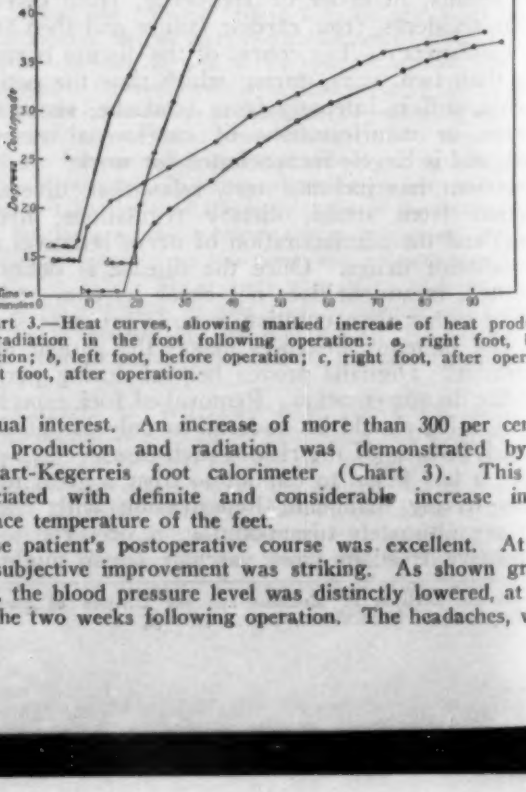

Chart 3.—Heat curves, showing marked increase of heat production and radiation in the foot following operation: *a*, right foot, before operation; *b*, left foot, before operation; *c*, right foot, after operation; *d*, left foot, after operation.

The patient's postoperative course was excellent. At first the subjective improvement was striking. As shown graphically, the blood pressure level was distinctly lowered, at least for the two weeks following operation. The headaches, which

had previously occasioned such great distress, entirely disappeared, and recurred but once during the first month and then only for a brief period. His vision improved markedly, the blind spots decreasing materially so that he read almost any print with comfort. No change was noted in volume or composition of the urine; certainly the efficiency of the kidney was in no way impaired.

While the patient was getting up and about, the blood pressure gradually mounted. On one occasion, the headache and epigastric distress recurred for a day or so. He now responded well to nitrites and to the hypertension baths, in this respect exhibiting marked improvement over his former condition. A letter received four and one-half months after the operation expresses great satisfaction over the subjective improvement. Only on one occasion had he suffered from headache and epigastric distress. At six months he reports recurrence of hypertension (systolic blood pressure, 220, and diastolic, 120), but otherwise, is in good health. However, the period elapsing is entirely too short to admit of conclusions as to the effectiveness of this procedure. The case is reported at this time merely to call attention to the possibilities of abdominal sympathetic neurectomy and to the interesting changes observed subsequent to the operation.

RADIUM (MESOTHORIUM) NECROSIS *

FREDERICK L. HOFFMAN
NEWARK, N. J.

An investigation into the subject of radium necrosis was suggested to me by a number of unusual cases of necrosis among young women living in the Oranges and Newark, N. J., all of whom had at one time or another been employed at a radium plant engaged in the manufacture of luminous watch dials. The facts of the situation were first brought to my attention by the executive secretary of the New Jersey Consumers' League with the request that I investigate the circumstances and contribute the results of my research toward a possible solution of a serious industrial disease problem. What follows represents rather the results of a fact finding process than of a technical investigation into matters of detail for which I would not be qualified. Interviews were had as nearly as possible with all the interested parties as well as with attending physicians, dentists or others in position to aid the investigation with supplementary suggestions and information.

The first and, as far as I know, the only reference to the disease in medical literature occurs in a footnote to an address on "Osteomyelitis of the Mandible and Maxilla," an address delivered before the American Dental Association, in September, 1924, by Dr. Theodore Blum of New York. This note reads, "During January, 1924, there came under my observation a case of osteomyelitis of the mandible and maxilla, somewhat similar to phosphorus necrosis; which, however, was caused by some radioactive substance used in the manufacture of luminous dials for watches. The condition has been termed 'radium jaw.'" It has seemed to me to be more appropriate, however, to use the term "radium (mesothorium) necrosis" for the present purpose.

There are, apparently, four trustworthy records of deaths, which for subsequent discussion have been given a serial number, while the addresses are omitted to protect the families against undue annoyance. The cases are all a matter of official record and can be identified without difficulty, if required: (1) H. K. V., Orange, N. J., December, 1924; (2) A. M., Orange, N. J., June, 1923; (3) I. R., Newark, N. J., 1923; (4) H. Q., Orange, N. J., June, 1923.

Of the foregoing four cases, the first one attracted considerable attention, being referred to in the newspapers of the period at some length, with occasionally some interesting and useful observations. Since this case is, therefore, sufficiently well known, it will be referred to here by its proper name as the "Kuser" case:

Mrs. Kuser died, Dec. 9, 1924, at her home in Newark. According to a physician of Orange, who treated her, her system had in some way been poisoned as the result of necrosis of the jaw bone. Mrs. K. had been employed for four years previous at the radium plant in Orange. As far as can be ascertained, the history of her case was somewhat as follows:

She was 25 years of age at the time of her death, and some eight years previous had secured employment at the radium plant, which she left on account of ill health. For two years she was entirely incapacitated for work, and about a year later a dentist discovered, on extracting several teeth, that the jaw bone was rapidly decaying. In February of that year she went to the Flower Hospital in New York, where the jaw was operated on. She was in the hospital three times for periods of different length. Later on, she was sent to a hospital on Long Island, where she remained for fifteen weeks. Through the kindness of a New York physician, who treated the case, I have been given access to some of the records; but they do not throw much further light on the situation. The woman died subsequently under very trying conditions. The attending dentist is unequivocal in his view that the affliction was directly traceable to occupational conditions and to the result of radioactive substances being introduced into the mouth by means of a penciled painting brush, as was found to be customary among the young women employed in this kind of work. Roentgenograms have been preserved of the condition of the teeth and jaw, clearly indicative of a very unusual condition more or less resembling necrosis encountered among match workers.

The history of other deaths is less complete than in the Kuser case, with the possible exception of the second case which was treated by a physician of Newark, who has preserved some excellent roentgenograms of the condition of the jaw and teeth, as well as a specimen of a part of the jaw removed at necropsy, showing obvious evidence of advanced necrosis.

Aside from the patients who have died, I obtained a record of eight patients still living, although one is near the point of death: (5) Miss M. C., Orange; (6) Miss J. K. S., Orange; (7) Miss G. S., Orange; (8) Miss G. F., Newark; (9) Miss A. B., Orange; (10) Miss H. M., Newark; (11) Miss S., Newark; (12) Miss E., Orange. Of these patients I myself interviewed four. Patient 5 is in a far advanced condition of pernicious anemia, complicated by a dreadful condition of necrosis. Miss C. has a clear history of previous employment for several years at the radium plant and of continued illness for perhaps a year and a half, terminating, as stated, in a far advanced condition of a complication of diseases. She is being treated by a physician of East Orange, who has been good enough to furnish me with this brief record of the case:

Miss C. has now been ill for nearly three years. She worked in the radium factory. She began with inflamed gums, with a gradual breaking down of tissue around the teeth and followed

* Read before the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

by slow necrosis of the jawbone with several teeth falling out. From the beginning of her attack she became anemic and is markedly so now. She has been seen by some of the best dentists, and with the history of other girls who have been affected the same way and have been operated on with serious results, dentists have refused to operate on Miss C. She is holding her own very well, but destruction of the jaw goes on and her condition goes on to a probable fatality. The blood analysis gave the number of erythrocytes as 1,180,000 per cubic millimeter. The number of leukocytes was 4,700. The differential count showed: polymorphonuclear neutrophiles, 58 per cent.; small lymphocytes, 40 per cent.; large lymphocytes, 2 per cent.; eosinophiles 0, and basophils 0. The number of cells counted was 200; the hemoglobin was 25 per cent., the color index, 1.1; and the majority of the blood cells were macrocytes and a few polychromatophils were noted. No nucleated red cells were found.

The patient has received a considerable amount of medical attention, having been to a hospital in Philadelphia where she was treated by Dr. Stengel, an authority on occupational diseases. Medical expenses on her account, thus far, have amounted to not much less than $1,000.

I have been unable to see Patients 6 and 7. They are sisters who formerly worked at the radium plant.[1] I have been furnished with roentgenograms of the teeth and jaws giving an adequate illustration of the condition of the teeth, indicative of radium necrosis. The attending dentist is of the opinion that the direct causative factor has been exposure to radioactive substances. The cases are not as serious as some of the others, but the most sinister aspect of the affection is that the disease is apparently latent for several years before it manifests its destructive tendencies to the jaw bone and the teeth.

Patient 8 is a woman, aged about 26, who worked for some time at the radium plant but left there possibly a year ago when she secured a position with a bank. Her condition at one time was quite serious, but the teeth on one side of the jaw were removed with a portion of the jaw, and apparently there has been no recurrence of the affection. It is, however, the opinion of the attending dentist that such a recurrence is quite possible. The patient is well developed physically, and apparently is now in good health. She suffered considerably when the disease was active, but, fortunately she secured the best qualified treatment, though at considerable expense to herself. A roentgenogram of her teeth and jaw have been furnished by the attending dentist.

I interviewed Patient 9 and found her to be a woman at present in excellent health. Her teeth, of which I obtained a roentgenogram, show no very serious effects or condition. She worked for some time at the plant, but left it when she found herself affected. She still suffers from the disease, but it is not in a seriously active form. She has, however, a curious swelling of the left breast, indicative of a possible tumor formation, but showing at present no indications of being a cancerous growth. The swelling comes and goes, and while it has been seen by one attending physician, no definite diagnosis has been arrived at. Whether it is an affection attributable to radium exposure is open to question.

I interviewed Patient 10, and found her in very good health. She is about 24, and weighs 165 pounds (75 kg.). She does not suffer seriously from her teeth at present, but to my regret I was unable to secure a roentgenogram. Her condition is decidedly hopeful and there will probably be no recurrence. She is, fortunately, under very good dental treatment. One curious fact with regard to this case is that the woman has a small growth on the side of her neck indicative of a benign tumor formation. It gives her some annoyance, but as yet she has not seen a physician, so that the proper diagnosis has not been arrived at. Whether this affection is the result of radium exposure is, of course, open to question.

Patients 11 and 12 I have not seen, but roentgenograms of the condition of the teeth have been furnished by the attending dentist. They present necrotic indications, not in advanced condition.

All of the foregoing twelve cases represent former employees of a radium plant in the Oranges. They have all done precisely the same work and in precisely the same way. They all were in the habit of wetting a penciled brush with their lips, while in use, for the purpose of painting watch dials with luminous or phosphorescent substances. There is some question of doubt as to whether they were instructed to do their work this way, or whether they worked contrary to instructions. They certainly seem to have copied the habit one from another, and found it decidedly convenient, the brush being better adapted to the purpose when penciled to a fine point with the lips. They all have a record of considerable working periods, and in all cases it seems that the disease condition did not develop until some months or years after discontinuance at the plant. This, of course, precludes a thorough investigation of conditions inimical to health as then existing, for plant conditions in the meantime have unquestionably been improved, and a notice is now posted reading "Do not put brushes in your mouth."

I have not been able to trace two of the death certificates, but regarding the patients who have died in the Oranges, I find that Patient 4 was certified to as having died from primary anemia after about six months' duration, complicated by Vincent's angina and pneumonia. This certificate is signed by a physician of West Orange, N. J. The certificate in Case 2 indicates that the cause of death was ulcerative stomatitis of about three months' duration complicated by syphilis. Neither certificate gives the slightest indication of radium affections.

With the foregoing information in my possession, I made every effort to secure supplementary data from those, who, like myself, had given consideration to the situation. I was informed by the state bureau of labor that an investigation had been made, but with entirely negative findings. As far as I am able to ascertain, the investigation did not include interviews with the persons directly concerned. I was informed also that an investigation had been made by the Medical School of Harvard University, but no report has as yet been published. The U. S. Public Health Service had briefly considered the matter but made no investigation. In correspondence with the company concerned, I learned that it had, of course, become aware of the insinuations made from time to time that work in the plant was injurious to health, but it had been unable to trace the affections reported to any causative factor of which it could take cognizance. It disclaimed any instructions to use the brush as has been intimated, but, to the contrary, affirmed that it had warned employees against wetting the brush with their lips. I inspected the plant, but there were no young women at work at the time on account of the practical cessation of activities in connection with the manufacture of radium watch dials.

1. One of these has since died from pernicious anemia.

At one time, as many as 150 persons or more had been employed, but now only two or three remain at work. The company has suffered seriously as the result of prevailing suspicions that the work is distinctly unhealthful and a menace to life under certain conditions. The work places were well lighted, thoroughly clean and in every way well adapted to a variety of functions. It requires, however, no extended study of the situation to confirm the widespread view that the wetting of the brush is practically an essential of quickness, delicacy and efficiency in putting on the luminous paint. The composition of this paint was fully explained to me, the major portion of it being a zinc sulphid mixed with a minute quantity of radium.[2]

I was informed that the situation on the part of the public was generally misunderstood, and technically the opinion seemed to be that the minute quantity of radium introduced into the mouth could not possibly have caused the amount of damage elsewhere indicated and a matter of unmistakable record in the roentgenograms that are available. I was also informed that the company at all times had been most willing to improve working conditions and that steps had been taken some time ago to introduce a complete service for dental supervision. Periodic medical examinations will in the future be required, but all of this is of small purpose with reference to conditions in the past, which appear to have been quite different and the removal of which will in all probability eliminate the danger which, for a time at least, must have been a matter of serious importance.

My attention was called in this connection to the large extent to which luminous radium dials were manufactured in Switzerland, and it was suggested that information be secured from that country. I do not recall any reference in medical literature to radium necrosis, which would unquestionably have been observed if cases had occurred in Switzerland, where, however, methods of work may be quite different. In other words, unless the radium is introduced into the mouth through the wetting of the brush, the whole operation is in all probability entirely harmless. I have heard it said that some of the young women would at night present an almost luminous appearance, resulting possibly from the dust from the zinc sulphid, which is a comparatively cheap ingredient. Radium could not possibly be a factor in this luminosity if it actually should have occurred. Finally, I was told that the company in question probably manufactured only 10 per cent of all radium dials in this country, and that if responsible for the conditions indicated, like conditions should have appeared elsewhere. This, however, would require an extended investigation, which for the time being at least has not been feasible.[3]

Since many of the technical questions involved are outside the scope of my own investigations, I was most fortunate in securing information from a gentleman who in former years was actively engaged in radium manufacture and who is technically probably one of the most qualified in this country.[4] He was good enough to prepare for me an extended account of the process and materials involved, which as nearly as possible I give in his own language.

2. I have since learned that mesothorium is used in the composition at this plant, the radioactive effects of which would be very much stronger.

3. The probable explanation for the nonoccurrence of such cases at other plants is that mesothorium has not been used and that the habit of wetting the brush with the lips was not followed, or at least not so generally, as at the Orange plant.

4. Dr. Sochoky of New York.

THE PROBABLE CAUSATIVE ELEMENT IN RADIUM NECROSIS

During the process of painting, in order to keep the brush finely pointed, the operator acquires the habit of shaping the brush by putting it between her lips, and in so doing, it is now suspected that a certain amount of self-phosphorescent material may reach and be deposited between the interspaces of the teeth, gums or tongue, thus causing or contributing to the ailment in question. Since in this process the operator deals with several substances, and is also otherwise exposed to various irritating agents, it is well to consider each agent or substance separately, and what action these could have alone, or in combination with others to provoke such conditions as are indicated.

The materials that each operator has to deal with are the following:

1. Undark, a composition of phosphorescent crystalline zinc sulphid compound containing small quantities of other elements, such as copper, manganese, lead, arsenic, thalium, uranium and selenium. In order to produce a luminous condition, the foregoing are mixed with various radioactive elements. The usual radioactive mixture contains radium, mesothorium and radiothorium.

The usual material an operator deals with most of the time contains various proportions of radioactive elements of joint radioactivity, equivalent to about 1 mg. of gamma radiation of radium element as an average, mixed with about 40 gm. of phosphorescent zinc sulphid in most minute subdivisions; ultimate particles of radioactive elements being rendered insoluble in ordinary solvents. This also applies to phosphorescent zinc sulphid crystals, which are not, or only to a limited extent, soluble in ordinary solvents.

2. The most commonly used adhesives are represented by a solution of gum arabic in water. Luminous material is mixed with this adhesive and painted. This adhesive, when put in the crucible for mixing, is not sterile since certain amounts of it remain in the crucible every day and are used with new material the following day. Crucibles remain exposed more or less to air, dust, etc. Furthermore, the camel's hair brush is not sterilized before or after working with luminous material or adhesives, and so also carries a certain amount of contamination from saliva and its contents.

CONDITIONS DURING OPERATIONS.

A consideration of the process of "pointing" the brush by moistening it between the lips will help in estimating approximately the probable amount of material that reaches the oral cavity. The brush is used for painting when dipped into the thick mixture of radioactive zinc sulphid with adhesive, and it can hold, when fully dipped into the mixture, from about 7 to 10 mg. of substance as a whole. The "pointing" of the brush, however, is done before dipping the brush into the mixture, or after removing as much of the mixture as is possible from the brush on to the side of the crucible. That is to say, at the time of "pointing," the brush does not hold more than a few milligrams at the most. When the operator "points" the brush between the lips, only a minute quantity of the mixture can remain on the lips, thus reaching the tongue, as larger amounts would be noticeable by the peculiar taste of the mixture.

Assuming that an operator repeats the operation of "pointing" several hundred times daily, the total amount of the material to reach the oral cavity could amount to from a few milligrams to about 100 mg. There is not, however, the probability that amounts larger than from 1 to 2 mg. remain constantly in the mouth, because of the taste and the probable spitting or swallowing.

It is interesting to speculate also on the probable distribution of the material that would be equally distributed throughout the mouth until it is either swallowed or disposed of otherwise. Further thought would seem to indicate that equal amounts of material present in the mouth continuously throughout the whole day, barring fluctuations such as the diminishing of average amounts during eating and drinking of water, could not amount to more than a few milligrams of zinc sulphid at a time.

AMOUNT OF RADIOACTIVITY.

Having assumed that a few milligrams of undark, of the quality containing from 1 mg. of radioactive element to 40 gm. of zinc, may remain constantly in the mouth during working hours, it appears that this amount would also be accompanied by from 25 to 50 millimicrograms, or from 0.000025 to 0.000050 mg. of radioactivity. It could be further supposed that larger amounts of material than those mentioned are probably swallowed. The question arises as to what effect, if any, this amount of radioactivity could produce locally. Such small doses of radioactivity in contact with the tissues, day in and day out, alone, do not seem to have any effect as such whatever. This can be seen from the experiences of the radium laboratories where chemists crystallize radium solutions every day; and furthermore, in the luminous material laboratories where large amounts of material are prepared, weighed, bottled, etc., and where chemists and physicists are exposed continuously to much stronger concentrations of radioactivity, in contact with their skin, lips and tongue, through the medium of cigarets, dust, etc. Assuming, however, that the above mentioned amounts of radioactivity present in the mouth are of sufficient intensity to start local trouble, their effect on the blood system would be noticeable before any local trouble could start. This is due to the fact that, of all the organs, the blood-making apparatus of the human body is the most sensitive to radioactivity. Taking this as an index and comparing it with the amounts that could be present in the oral cavity of the operator throughout the day, we reach these surprising facts:

The smallest single amount of radioactivity essential to produce visible microscopic or morphologic blood changes, such as increase of erythrocytes and leukocytes or decrease of leukocytes with decrease of erythrocytes following, would be in the order of about 20 micrograms injected intravenously in single doses or distributed in at least 2 microgram doses daily for longer periods of time, when injected intravenously; 20 micrograms injected in soluble form does not show any influence on the blood in a single dose. The amounts mentioned are about 2,000 times larger than those assumed in the case of operators. The radioactivity the operators work with, as mentioned before, is in insoluble form. Therefore, it could not, to any large extent, penetrate to the tissue and accumulate therein, and act, after a certain period of time, in a cumulative way. On the other hand, if we dismiss the possibility of its penetration into the tissue and the gradual accumulation, then the amount (as would be evident by the presence of radioactive elements in the jawbones, which could be easily detected) of radioactivity present in the mouth, although constantly present, is far too small to produce local destruction of the tissue such as is produced by larger amounts of radioactivity on the skin or mucous membranes. This applies to irritative qualities of radioactivity produced by beta and gamma radiations, whereas alpha radiation emitted by radium is not considered.

During the extraction of radioactive elements in laboratories, likewise their use in the medical profession, etc., burns and destruction of tissues occur as the result of exposure of the radioactive elements sealed in containers of glass or metal. Radiations that go through the containers consist only of beta and gamma rays, representing only a fraction, that is, 5 per cent., of the total radium energy. The rest of the energy represented by alpha radiation is screened off by the glass or other material of which the container is made.

The alpha radiation emitted by the radium elements is of very low penetrative power and is easily screened by two or four layers of ordinary cigaret paper, but it is very irritative to tissues. It would appear possible that small quantities of radioactive elements mixed with phosphorescent zinc sulphid and deposited on the tissue, acting on it for considerable intervals of time, may produce irritative effects by the above mentioned alpha radiations.

If these weak radiations are combined with physical chemical irritating effects of zinc sulphid and centered on a certain spot of tissue, for a long period of time, it could be assumed that under conditions it could produce local changes on the mucous membranes, not directly comparable to the necrotic or vesicant effect of beta and gamma radiations but sufficient to lower the resistance of the local tissues to the pathogenic bacteria's entrance and start of osteonecrosis.

That the cases in question are results of such joint effect of various agents, rather than of single ones, is the logical assumption, so much more so since effects of burns produced by radioactive elements are never progressive but heal eventually, contrary to the effects of the soft roentgen-ray radiations, and they never produce necrosis of the bone.

In order to substantiate the former assumption and so establish what agent or group of agents was responsible for the pathologic conditions in question, it is necessary to diagnose correctly the number of cases, the diagnosis to be centered on:

(*a*) Whether the disease is malignant or not, local or metastatic.

(*b*) Whether it is bone necrosis with presence of some predominant bacteria.

(*c*) Whether this necrosis is local.

(*d*) Whether it becomes constitutional, and if so, after how long a time after the appearance of the first symptom.

Culture from local tissues and blood studies should solve the foregoing question and solve the diagnosis.

COMMENT

The foregoing thoughtful but highly technical observations make a valuable contribution to the strictly scientific study of the subject. They unquestionably fall short in dealing with the medical aspects of the cases under observation, and, as indicated, a thorough diagnosis fully amplified by all necessary instrumental observations is of the first importance. Whatever may be the result of such investigations, they are not likely to set aside the very obvious fact and conclusion that the cases in question are of occupational origin, and that they should be brought within the plan and scope of the workmen's compensation for industrial diseases. I am able to add to the foregoing, though not directly bearing on the particular cases under consideration, the results of a valuable investigation into the physical condition of persons engaged in measuring radium preparations made by Dr. R. C. Williams of the U. S. Public Health Service, published, Dec. 21, 1923. The report covers observations made during a period of about one and one-half years, ending with July, 1923, on the physical condition of persons employed during that time in the radium section of the U. S. Bureau of Standards.

PHYSICAL CONDITION OF PERSONS MEASURING RADIUM PREPARATIONS

It is explained that the reasons for making this study were twofold: First, the necessity for periodic supervision of persons engaged in the constant handling of radium, in order to properly safeguard their health. Second, as a matter of scientific interest to note the physical effects upon radium workers of continued exposure to radiation. Dr. Williams takes occasion to point out that "it has been well known for several years that persons exposed to large amounts of radiation frequently experience harmful physical effects. Various general symptoms, such as headache, malaise, weakness, undue fatigue, unusual need of sleep, increased excitability, fretfulness, irritability, disordered menstruation, attacks of dizziness, etc., were said to be caused by long and repeated exposures to radioactive substances, but more recent experimental and clinical evidence shows that these general symptoms are perhaps not so frequent in occurrence nor so important as danger signals as are the now well recognized blood changes.

It does not fall within the present discussion to reconsider the facts disclosed by the investigation of Dr. Williams except that as a matter of record it may be useful to recall his conclusions as regards the extent of the effects of the exposure to radiation, depending on other facts but in particular on the (*a*) amount of radiation to which the subject is exposed; (*b*) length of time of exposure; (*c*) frequency of the exposures; (*d*) proximity of the radium to which the subject is

exposed; (*e*) amount and character of protection afforded against radiation, and (*f*) character of the rays to which the subject is exposed.

I also quote the principal exposures and sources of exposure to radiation during the process of measuring radium at the Bureau of Standards.

1. Exposure when standing before the open safe for the purpose of finding, identifying and checking the particular tube desired.

2. The use of fingers on forceps in taking a tube from the container and placing it in the wooden carrier box.

3. Exposure when the tube is being placed on the instrument for reading.

4. Exposure as in 1 and 2 when the tube is being returned to the safe after the readings are completed.

The general conclusions regarding the results of physical examinations at the beginning of the study, limited to four males and five females, are stated as follows:

> No serious defects were found in any of the group. Two of the males had symptoms of the skin of the fingers and hands which are suggestive of the effects of radiation. One male attributes his nervousness and digestive disturbances to continued exposure to radiation. He states that members of his family, without actually knowing whether he had been exposed to radiation or not, could tell accurately by his increased nervousness and irritability that he had been exposed to radiation. Two females had enlarged thyroid glands. The cardiac findings in all the females are thought to be functional. Menstruation in the females had not been disturbed by exposure to radiation. One female (No. 5) had recently returned from two months' sick leave. A physician had made a clinical diagnosis of anemia and nerve fatigue. At the time of the physical examination made during this study she still felt nervous and depressed.

and furthermore that

> The physical examinations, therefore, seem to show that, of the nine persons examined, only two presented any signs of the effect of radiation on the skin, and that exposure to radiation apparently produced a lowering of blood pressure in the majority of cases. It was thought that there might exist a relation between the decrease of red or white blood cells in certain members of the group and the low blood pressure, but it appears, on careful study that such was not the case.

CONCLUSION

It is self evident from the foregoing that the situation is one of extraordinary complexity. Apparently, radium necrosis occurs only under certain and quite exceptional conditions. It is not the fact of general exposure to radioactive substances or nearness thereto, but, apparently, the direct result of introducing such substances in minute quantities into the mouth through the insanitary habit of penciling the point of the brush with the lips. As has been said before, every case personally investigated gives an unmistakable history of this habit, while the numerous roentgenograms clearly indicate the consequences to both the roots of the teeth and the jawbone. It may be argued, of course, that other portions of the mouth, particularly the tongue or the lips, should be affected, but the mucous membrane of tissues might not necessarily have the same affinities for radioactive substances as the more sensitive roots of the teeth and possibly the bone of the jaw. As bearing indirectly on the foregoing cases, I am able to refer to an extremely interesting occurrence brought to my attention by Dr. Davidson of Newark. He has for some time past been treating a patient for radium necrosis who did not work at the radium plant nor was ever exposed to radioactive substances otherwise than that he had been treated for a tumor of the jaw with radium, as the result of which treatment necrosis developed, and is still developing, being only partly under curative control. I have seen the case myself and am convinced that the condition is as stated, and the direct result of radium exposure. Aside from the foregoing evidence with reference to particular cases, I may mention one additional case of which the details, unfortunately, are not obtainable, but which was brought to my attention by Dr. Andrew McGowan of East Orange, who writes: "Several years ago, a girl came to me with a marked swelling of the gums, looseness of teeth and indications of a necrotic process. She said she used a small brush and shaped it with her mouth before painting, although a small container of water was supplied for the purpose. Unfortunately, she did not return for treatment, so the history of the case ends at that point."

How many cases there are, or may have been, is, of course, a matter of mere conjecture. One dentist, Dr. B. T. Foulkes, writes me: "I have any number of patients who have been employed and are still employed in the so-called radium plant of Orange, but I have never had a case of any kind of necrosis among them. I have read so much about this in the newspapers at different times that I have inquired from my patients as to how this material is used, and I find that many put this so-called radium in their mouth. If this is the case, I see no reason why radium necrosis should not develop, provided, of course, the material contains radioactive substances."

At the outset of this investigation, I was frequently confronted with the statement that the cases had been diagnosed as phosphorus necrosis; but they could not be that, since phosphorus substances are not used. While the two forms of necrosis unquestionably resemble each other quite closely, it should not be difficult for one thoroughly qualified for the purpose to differentiate the one type from the other. In any event, however, we are dealing with an entirely new occupational affection demanding the utmost attention on the part of those who are in a position to render the necessary technical assistance, but at the same time it is a safe assumption that if the insanitary habit of wetting the brush with the lips is done away with the disease itself will probably tend to disappear, or in any event become extremely rare.

ABSTRACT OF DISCUSSION

Dr. J. P. P. Knef, Newark, N. J.: The clock and watch industry of the United States is very large, and the number of operators and employees handling various types of luminous material runs into hundreds. Until the causative element of the apparently unknown disease is finally established, and until a reliable therapeutic method or methods dealing with the cure of this disease is found, every operator is exposed to uncontrollable danger which may terminate prematurely his or her life.

Method of Securing County Health Department.—County authorities ordinarily are not disposed to appropriate funds for health work unless they are convinced that public sentiment in the county will approve their action. Therefore, the usual first step in securing the establishment of a county health department is to conduct a campaign of education in the county to show the advantages and economy of public expenditures for this purpose.—Parran, Thomas, Jr.: *Pub. Health Rep.* **40**:983 (May 15) 1925.

THE VITAL CAPACITY OF THE LUNGS IN PNEUMONIA*

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The vital capacity was defined by Hutchinson [1] as the quantity of air a person is capable of expiring after the deepest possible inspiration. Although many thoracic diseases are known to diminish the vital capacity, in few, if any, is the reduction more striking than in pneumonia. The sudden fall of the vital capacity in pneumonia and the subsequent increase incident to uncomplicated convalescence are sufficiently uniform to be of diagnostic significance. The present paper, based on a study of thirty-two cases of pneumonia in the medical wards of the University Hospital, will deal with the diagnostic and prognostic aspects of the vital capacity in this disease.

Vital Capacity Data in Pneumonia, Delayed Resolution, and Empyema

Case	Sex*	Age	Height, Cm.	Weight, Kg.	Surface Area, Sq. M.	Estimated Vital Capacity, C.c. (West's Standard)	(A) Lowest Observed Vital Capacity, C.c.	Percentage of West's Standard	(B) Highest Observed Vital Capacity, C.c.	Percentage of West's Standard	Interval Between A and B, Days	First Vital Capacity Reading, Days Since Onset of Pneumonia	Clinical Condition
1	♂	34	181	60	1.77	4,425	1,250	28	3,850	87	179	6	Lobar pneumonia, uncomplicated
2	♂	19	168	63	1.72	4,300	700	16	2,400	56	14	5	Lobar pneumonia, uncomplicated
3	♂	28	172	65	1.78	4,450	1,850	42	3,300	74	4	5	Lobar pneumonia, uncomplicated
4	♂	47	169	60	1.70	4,250	1,300	31	3,850	91	338	3	Lobar pneumonia, uncomplicated
5	♂	18	175	70	1.85	4,625	700	15	2,800	61	28	7	Lobar pneumonia, uncomplicated
6	♂	44	175	66	1.80	4,500	1,150	26	2,900	65	126	7	Lobar pneumonia, uncomplicated
7	♂	21	175	69	1.84	4,600	1,350	29	3,050	66	10	3	Lobar pneumonia, uncomplicated
8	♂	42	167	69	1.79	4,475	700	16	3,350	75	138	8	Lobar pneumonia, uncomplicated
9	♂	40	161	50	1.52	3,800	1,000	26	3,000	79	356	7	Lobar pneumonia, uncomplicated
10	♂	22	189	81	2.08	5,200	1,450	28	3,000	58	9	6	Lobar pneumonia, uncomplicated
11	♂	21	167	62	1.70	4,250	1,450	34	3,200	75	11	5	Lobar pneumonia, uncomplicated
12	♀	47	157	52	1.50	3,000	1,000	33	3,000	100	153	9	Lobar pneumonia, uncomplicated
13	♂	18	172	60	1.72	4,300	2,300	53	4,200	98	17	10	Lobar pneumonia, uncomplicated
14	♂	35	172	67	1.81	4,525	1,350	30	1,900	42	2	4	Lobar pneumonia; death
15	♂	42	171	57	1.68	4,200	1,000	24	1,000	24	0	6	Lobar pneumonia; death
16	♂	24	174	69	1.83	4,575	700	15	700	15	1	4	Lobar pneumonia; death
17	♂	59	180	70	1.90	4,750	1,000	21	1,000	21	1	5	Lobar pneumonia; death
18	♀	15	142	46	1.32	2,640	1,650	62	2,700	102	14	13	Bronchopneumonia
19	♂	15	170	57	1.66	4,150	1,600	39	3,700	89	138	3	Bronchopneumonia
20	♂	23	170	61	1.71	4,275	2,400	56	4,100	96	41	5	Bronchopneumonia
21	♂	18	165	61	1.68	4,200	800	19	3,250	77	117	9	Delayed resolution
22	♂	24	162	60	1.64	4,100	1,500	37	2,550	62	16	14	Delayed resolution
23	♂	15	172	57	1.68	4,200	1,250	30	2,700	64	30	13	Delayed resolution
24	♀	54	160	52	1.52	3,040	900	30	2,500	82	215	8	Delayed resolution
25	♀	16	157	45	1.42	2,840	1,300	46	3,050	107	280	5	Delayed resolution
26	♂	36	174	80	1.94	4,850	800	16	3,000	62	35	13	Delayed resolution
27	♀	56	177	76	1.93	3,800	1,050	27	3,350	87	147	7	Delayed resolution
28	♂	31	183	66	1.86	4,650	1,200	26	2,800	60	3	3	Empyema
29	♂	33	165	63	1.70	4,250	1,300	31	4,700	111	177	6	Empyema
30	♂	48	174	85	2.00	5,000	650	13	3,450	69	412	8	Empyema
31	♂	16	167	54	1.61	4,025	1,050	26	3,400	85	411	16	Empyema
32	♂	27	162	58	1.62	4,050	1,300	32	3,450	85	416	37	Empyema

* In this column, ♂ means male; ♀, female.
The author is indebted to Dr. Simon S. Leopold for the vital capacity readings of Cases 18 and 27.

Unfortunately, wide variations in the vital capacity are to be found in persons of the same weight and stature, so that as Arnett and Kornblum [2] have pointed out, little assistance can be expected from this test in the early diagnosis of pulmonary tuberculosis or cardiac disease, unless previous readings have been taken while the patient was still in good health. Individual variations from West's surface area standard amounting to 10 or 20 per cent. are quite frequent, and where elderly persons are under consideration Bowen [3] shows that reductions amounting to 50 per cent. are to be expected. Readings below 50 per cent. of the estimated normal are rarely found in healthy persons, and, moreover, as Myers [4] points out, few if any acute infections except pneumonia cause reductions of such magnitude. If, therefore, pneumonia is suspected, a vital capacity of less than 50 per cent. of the standard is strong confirmatory evidence in favor of such a diagnosis. In the group of thirty-two cases on which the present paper is based, the average of the lowest readings obtained was 30 per cent. of West's standard, and in only three patients (Cases 13, 18 and 20) were the lowest readings above 50 per cent. of this standard; each of the three cases in question was atypical in its clinical manifestations.

The vital capacity began to rise usually on the day of the crisis, though sometimes the rise would begin a day or two earlier or later. In ten cases of lobar pneumonia without pulmonary complications, vital capacity determinations were made prior to the crisis. The lowest reading was given before the crisis in seven, on the day after the crisis in one, on the day of the crisis in one, and in one case equally low readings were obtained both before and after the crisis. It was frequently possible, therefore, to predict in advance the advent of the crisis.

The average daily increase in the uncomplicated cases of lobar pneumonia was 131 c.c. during the first five to ten days from the crisis. Only in Case 4 was the average rise less than 100 c.c. a day, and this was due to an unaccountable rise to 2,000 c.c. on the day of the crisis. In this case the average daily increase in the vital capacity for the five days following the day after the crisis was 240 c.c. It appears, therefore, that a rapid rise is quite constant in uncomplicated pneumonia, though this rise is by no means steady, as a glance at the charts will show. In the three cases of broncho-

* From the Medical Division of the University Hospital.

1. Hutchinson, J.: On the Capacity of the Lungs, and on the Respiratory Functions, with a View to Establishing a Precise and Easy Method of Detecting Disease by the Spirometer, M. Chir. Tr. **29**: 137, 1846.

2. Arnett, J. H., and Kornblum, K.: Vital Capacity: An Inquiry into Its Value as a Diagnostic Procedure, Ann. Clin. Med. **3**: 225 (Oct.) 1924.

3. Bowen, B.: The Relation of Age and Obesity to Vital Capacity, Arch. Int. Med. **31**: 579 (April) 1923.

4. Myers, J. A.: Studies on the Respiratory Organs in Health and Disease, VI, the Significance of the Vital Capacity Test in Pulmonary Tuberculosis, Bronchial Asthma, Pneumonia and an Acute Infection Outside the Respiratory Tract, Arch. Int. Med. **30**: 648 (Nov.) 1922.

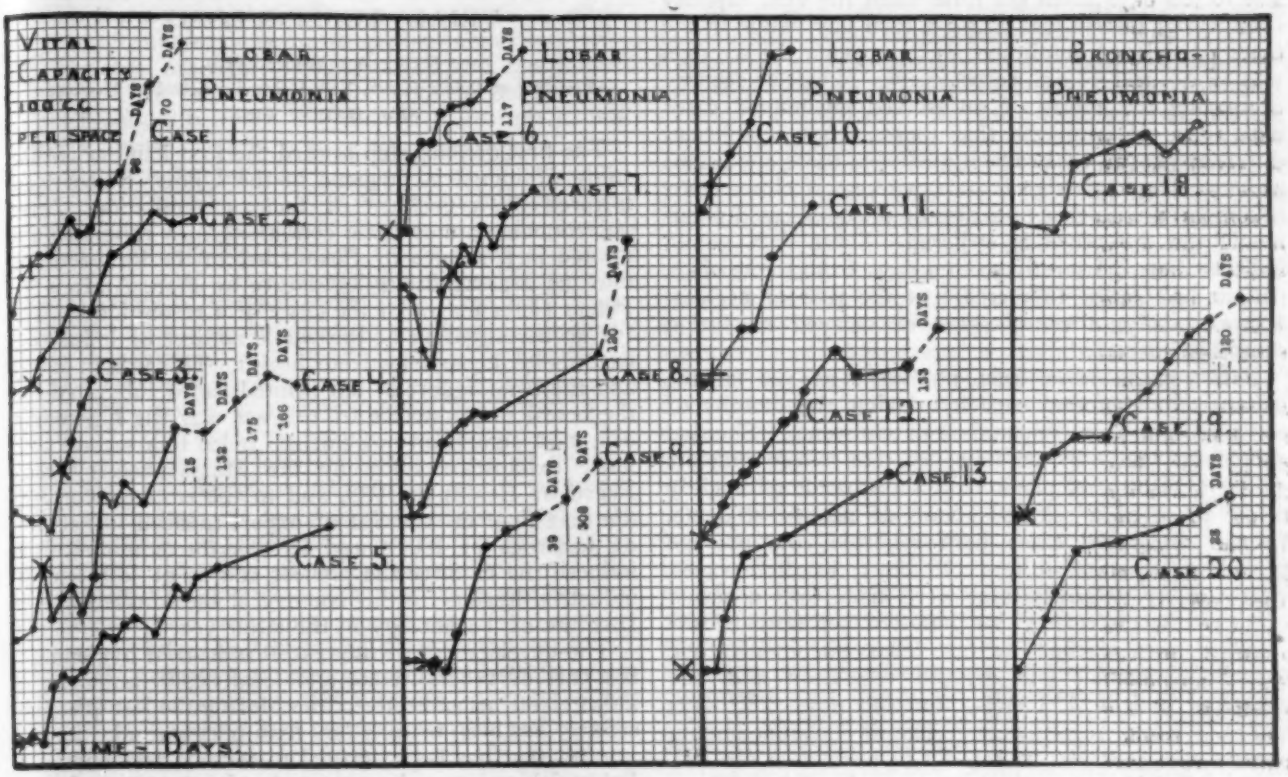

Chart 1.—Vital capacity in lobar pneumonia and bronchopneumonia: *X* indicates crisis; rapid rise in vital capacity incident to uncomplicated convalescence may be noted. By using the table in conjunction with the charts, one may find the individual vital capacity readings in cubic centimeters or percentage of West's standard; also the body measurements, etc.

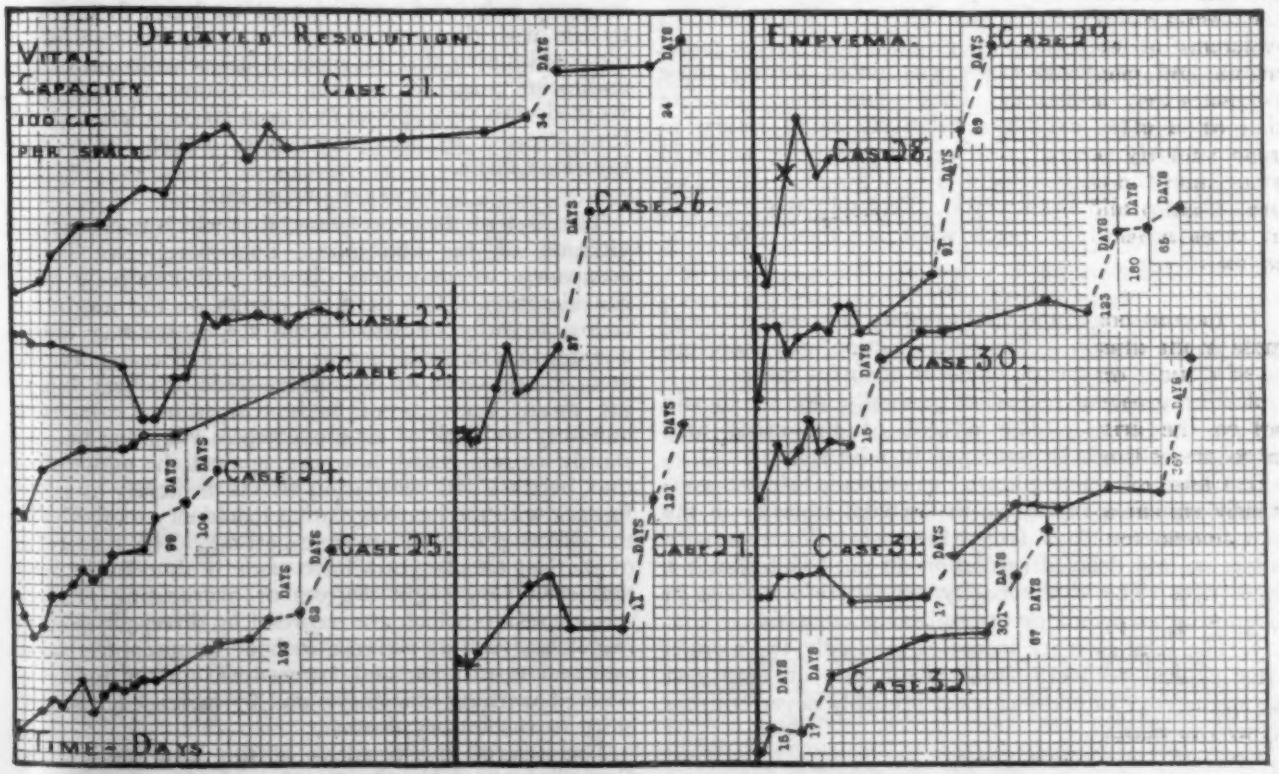

Chart 2.—Vital capacity in delayed resolution and empyema. *X* indicates crisis. The gradual rise here shown may be compared with the rapid rise shown by the pneumonia cases in Chart 1.

pneumonia in this series the average increase during the five to ten days from the time when the vital capacity commenced to rise was 112 c.c. each day, while in the cases of delayed resolution and empyema the average was 87 c.c. and 41 c.c., respectively. It will be seen by comparing the charts of unresolved pneumonia cases with those of empyema that there is not a sufficient difference in the vital capacity between these conditions to be of diagnostic significance, whereas if either chart is compared with that of a case of uncomplicated pneumonia the difference is striking. These data would indicate that if, from five to ten days from the crisis, a patient had failed to increase at the rate of at least 100 c.c. daily, a complication or delayed resolution should be suspected.

Few reports have been published as yet on the behavior of the vital capacity during the months of convalescence from pneumonia or empyema. Shepard and Myers [5] have shown, however, that college students giving a history of pneumonia show readings slightly below those of a selected group of normal students. In the thirty-two cases here reported, the average period of observation was 119 days; in three cases, vital capacity determinations were made over a period of more than a year. One hundred per cent. of the standard was reached by one lobar pneumonia, one bronchopneumonia, one delayed resolution and one empyema case in 153 days, fourteen days, 280 days and 177 days, respectively. The bronchopneumonia patient who returned so rapidly to normal (Case 18) was atypical in many other respects. In eight patients examined from 100 to 200 days after discharge, the average vital capacity gain each day was 6.2 c.c. In two patients examined from 200 to 300 days after discharge, the average daily gain was 2.3 c.c. In five patients examined from 300 to 400 days after discharge, the average daily gain was 3.2 c.c. No significant difference between the average daily rise of the pneumonia and empyema cases was noted during these periods after discharge. These data would indicate that some cases exhibit a relatively rapid return to approximately normal vital capacity figures, while in other cases the improvement is very gradual, extending over months and even years. Probably the majority of cases never fully reach what for them would be normal.

CONCLUSIONS

1. In pneumonia, the vital capacity is greatly reduced early in the disease. The determination may therefore be of distinct diagnostic value in doubtful cases.

2. The greatest reduction generally occurs shortly before the crisis. The advent of the crisis may therefore at times be predicted in advance.

3. Cases of uncomplicated pneumonia almost constantly exhibit a rapid rise in the vital capacity in the first five to ten days from the crisis. Patients with empyema and delayed resolution do not exhibit such a rapid rise. The vital capacity may therefore assist in diagnosing empyema or unresolved pneumonia.

4. The vital capacity increases gradually for months after clinical recovery from pneumonia or empyema has occurred. In many cases it probably never entirely returns to normal.

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5. Shepard, W. P., and Myers, J. A.: The Respiratory Organs in Health and in Disease, XVI, a Comparison of Vital Capacity Standards in Three Thousand Five Hundred and Thirty-Four Male University Students, Arch. Int. Med. 35: 377 (March) 1925.

FACTORY VENTILATION AND INDUSTRIAL TUBERCULOSIS *

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The first definite step toward the first hand scientific study of industrial hygiene in the United States was inspired by a problem of factory ventilation. The objectionable atmospheric conditions in a rope factory located in a suburb of Boston led to the introduction into the Massachusetts legislature by Hon. Andrew J. Peters (later mayor of the city) of a resolution calling for an investigation of the whole subject of industrial hazards by the state board of health. This was in 1904, and the brief report of ten printed pages submitted by the board in pursuance of this act was the beginning of a most significant movement. It led to a second and more exhaustive study by the Massachusetts State Board of Health in 1905, and to the employment for the first time in America of expert medical inspectors of factories in 1907; and it was the stimulus that induced me to offer the pioneer course of lectures on industrial hygiene in this country at the Massachusetts Institute of Technology in the latter year.

The development of interest in industrial hygiene on the part of federal, state and local health authorities, industrial firms and universities, during the last quarter-century has been nothing less than phenomenal. In the interest that has been devoted to factory accidents and industrial poisons, however, the importance of the adequate ventilation of factories and workshops has received something less than its due share of attention; and it is still pertinent to emphasize its significance, both to the medical profession and to the laity.

The problem of factory ventilation is a twofold one. In every industrial establishment we have, first of all, to deal with the same fundamental requirements as to air conditioning that we meet in the schoolroom or the auditorium; and in certain workrooms we are confronted with very special and peculiar ventilation problems created by the presence of toxic fumes and injurious dusts.

GENERAL PROBLEMS

The first of these problems, that which concerns the vitiation of the atmosphere due merely to human occupancy, we may here dismiss with relatively brief consideration. The harmful effects of the air of an ordinary, badly ventilated room are, as we now know, due not to lack of oxygen or to excess of carbon dioxid or to the presence of mysterious toxic products, but to the physical effects of high temperature, abnormal humidity and lack of air movement. We must be constantly on our guard, however, against the assumption that, because bad ventilation affects us merely by interference with the heat-regulating machinery of the body, the effects produced are unimportant. The researches of the last twenty years have made it abundantly clear that even very slight degrees of overheating produce serious results which are recorded by direct physiologic responses, such as increase in body temperature, pulse rate and respiration and lowered vasomotor tone—by lowered working efficiency—and by increased susceptibility to respiratory disease.

The careful investigations of the New York State Commission on Ventilation showed that the amount

* Read before the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

of physical work performed under otherwise equivalent conditions was reduced by 15 per cent. at 75 F. as compared to 68, and by 37 per cent. at 85 as compared with 68. In actual practice, Vernon, in England, has found that in tin-plate mills with good ventilation the summer output is only 3 per cent. less than that obtained in the winter months, while in mills without good ventilation the corresponding falling off amounts to 13 per cent. The total economic loss due to the overheating of factories must be very large indeed.

Even more striking, perhaps, is the effect of overheated rooms in winter on susceptibility to acute respiratory infections of various sorts. The New York State Commission on Ventilation made a careful comparison of the incidence of such infections among some 5,000 school children in three groups of schoolrooms maintained, respectively, at average temperature of 59, 66.5 and 68.5. The first two groups, in the cold and the cool rooms, showed essentially identical results; but the third group, in the warm rooms, had an 18 per cent. excess in absence due to respiratory disease, and a 70 per cent. excess of respiratory disease among pupils in attendance. The loss of industrial efficiency due to absenteeism resulting from overheating is another far reaching cause of subnormal production.

It must, then, be recognized as essential in sound factory management to provide a thermometer in every workroom, to designate the foreman or some other proper person to read it at regular intervals, and to take definite steps for the improvement of air conditions whenever the temperature passes the critical point of 68. The first step will naturally be to moderate artificial heat sources, for the cause of overheating in many a factory workroom is not lack of ventilation in the proper sense, but merely the fact that radiators are turned on when they should be turned off. If, on the other hand, the overheating is really due to human occupancy, the remedy must be sought by supplying fresh cool air in such a way as to avoid objectionable drafts. In a large proportion of cases the problem may be solved without elaborate machinery by the application of a reasonable knowledge of physics and a modicum of horse sense. Frequently, the admission of fresh air from the windows over deflecting boards to project it upward, and with radiators below, to temper it in cold weather, and the provision of a gravity exhaust duct for the removal of hot vitiated air from some point near the ceiling will meet all the requirements of the case. In other instances, where the workrooms are large and crowded or where the problem is accentuated by stoves, ovens or other heat sources, or by the presence of excessive moisture, mechanical ventilation with the use of fans may prove essential.

POISONOUS FUMES AND DUSTS

In addition to such more or less universal problems of air conditioning as have been so far discussed, we must deal, in many industrial processes, with the very special conditions produced by the presence of poisonous fumes and dusts.

Carbon monoxid is perhaps the most important of all atmospheric poisons, since it menaces life and health, not only in the factory but also in the garage and in the home. This highly toxic substance is, of course, produced instead of carbon dioxid whenever incomplete combustion takes place. One half of one part per thousand of carbon monoxid has proved poisonous, and exposure to two or three parts per thousand for half an hour may be dangerous to life. In industry, the greatest number of cases of carbon monoxid poisoning occur as a result of exposure to producer and blast-furnace gases in the steel and allied industries. Among less than a thousand men employed about Illinois blast furnaces, thirteen fatal cases occurred during a period of four years, with sixty-five severe and 216 mild cases of poisoning a year.

Poisonous lead salts, for the most part, enter the body by way of the digestive tract, although it is possible for poisoning to take place by absorption through the skin (as is the case with the new tetra-ethyl lead compound used in motor fuels) or as a result of dust breathed into the lungs. The normal way by which lead gets to the digestive tract is, however, by the swallowing of inhaled atmospheric dust. The trades chiefly affected are white lead making, paint mixing and dry color grinding, the manufacture of storage batteries, the making of porcelain and enamelware and, above all, painting, particularly the painting of automobile bodies and similar processes that involve spray processes and dry sandpapering. Over a hundred different industries have, however, contributed well defined cases of lead poisoning to the literature of the subject. In the state of Ohio, to take only one recently reported body of statistics, there were reported to the state department of health, during a period of ten years, 1,295 cases of industrial lead poisoning, and the vast majority of such poisonings were due to the inhalation of lead dust and fumes. In the hospitals of Detroit during three years, there were treated 108 cases of lead poisoning, of which sixty-seven occurred in a single factory among a group of men employed in the dry sandpapering of lead paint.

Carbon monoxid and lead are the most important of the purely industrial poisons, but there are many others that affect smaller groups of workers in a more or less intensive degree. Mercury salts, which cause the "hatters' shakes," arsenic and other heavy metals, the fumes of brass and zinc, the oxids of nitrogen, which produce acute and often fatal injuries to the lungs of munition and chemical workers, the irritant halogens, and a whole host of organic poisons, such as wood alcohol, carbon bisulphid, anilin and benzene and their derivatives, the nitrobenzenes and trinitrotoluene, are all common and serious industrial poisons. The dusts from certain tropical woods produce painful skin irritations similar to those which result from ivy poisoning. The increasing use of benzene in industry has attracted special attention during the last few years. A committee of the National Safety Council has been studying the problem, with the result that fifteen deaths and eighty-three more or less serious illnesses have been traced to this substance during the last few years. Furthermore, the committee, in the examination of a group of eighty-four workers exposed to benzene fumes, found that 15 per cent. of them showed a white blood cell count so low as to be strikingly suggestive of benzene poisoning, indicating, as in the case of carbon monoxid and lead, that besides the more obvious acute cases there exists in industry a considerable amount of mild undetected chronic poisoning.

DUSTS PREDISPOSING TO TUBERCULOSIS

Finally, there remains to be considered the effect of certain industrial dusts which are not toxic in the ordinary sense, but which exert a very specific and important influence on the prevalence of tuberculosis and other diseases of the respiratory tract, a problem that is one of the most important, and still one of the most neglected in the whole field of industrial hygiene.

The existence of a form of tuberculosis specifically related to industrial employment has been recognized from very ancient days. Hippocrates speaks of the metal miner as a man who "breathes with difficulty" and "is of pale, wan complexion." Agricola, in his book on metallurgy (published in 1556), states that "some mines are so dry that they are entirely devoid of water, and this dryness causes the workman even greater harm; for the dust which is stirred and beaten up by digging penetrates into the windpipe and lungs, and produces difficulty in breathing, and the disease which the Greeks call ἄσθμα (asthma). If the dust has corrosive qualities, it eats away the lungs, and implants consumption in the body; hence in the mines of the Carpathian Mountains women are found who have married seven husbands, all of whom this terrible consumption has carried off to a premature death."

TABLE 1.—*Mortality from Pulmonary Tuberculosis Among Granite Cutters Compared with That of the General Adult Population of Vermont*

Period	Deaths per 100,000 Population	
	Granite Cutters	Adult Population of State
1896-1899	394	190
1900-1904	353	166
1905-1909	719	149
1910-1914	801	120
1915-1918	1,064	108

How little the problem has changed in 400 years is clearly indicated by statistics recently collected in the United States. The problem has been somewhat confused by the careless use of industrial insurance statistics based on the ratio of tuberculosis deaths to total deaths and involving the fallacious comparison of tuberculosis ratios for so-called dusty trades with similar ratios for the general population as a whole, ignoring entirely important differences in social and economic status. For at least two groups of workers in the United States exposed to silica dust we have, however, full and controlled data. For the granite cutters of Vermont, Hoffman [1] gives the striking figures reproduced in Table 1. The steady increase of mortality among the granite cutters is attributed to an increasing dust hazard created by the use of pneumatic tools.

An altogether similar case is that of a Connecticut ax factory studied by Drury.[2] The factory is situated in an otherwise agricultural district, and through the circumstance that both the superintendent and the medical consultant of the factory had been in the employ of the company for twenty years, it was possible to follow up every death certificate in the four adjoining towns and determine the actual occupation of the deceased. The startling results obtained are indicated in Table 2.

Thus, we find the entire population of the mill district showing a tuberculosis rate of 200 as compared with 150 for the state as a whole. The mill population itself has a rate rising to 650, and the group of polishers and grinders the astounding rate of 1,900. The other employees of the mill are not entirely comparable in age, race and general social and economic status with the polishers and grinders, but it is evident that a death rate among polishers and grinders ten times the normal figure can be accounted for only by the specific hazards of their occupation. Nor is tuberculosis the only form in which they pay a penalty for their deadly employment. Dr. Drury reports that the mortality from pulmonary infections other than tuberculosis for the period 1900 to 1919 was 430 per hundred thousand for the polishers and grinders, as compared with 170 for the other employees of the ax factory.

Such conditions as those which have just been cited are to be looked for in one particular group of industrial processes—those which involve exposure to finely divided silica dust. It is probable that the inhalation of very large amounts of dust of any kind produces some irritation of the mucous membranes and may perhaps favor the development of acute diseases of the respiratory tract, such as bronchitis; so far as the dusts of vegetable origin are concerned, there is, however, very little concrete evidence that such is the case. Among those exposed to dusts like coal and cement, on the other hand, we have clear evidence of an excessive incidence of the acute respiratory diseases. Dublin reported that the influenza-pneumonia mortality in 1918 was twice as high among coal miners as in the general industrial population. As far as tuberculosis is concerned, however, coal and cement dust seem to produce a state of immunity rather than one of increased susceptibility. Hoffman finds that the coal-mining districts have a mortality from acute respiratory diseases 28 per cent. above normal, but that these districts have a tuberculosis mortality 21 per cent. less than that for the rest of the state.

The reason for this difference in the action of the different kinds of dust is still very obscure. We know that the inhalation of either coal or silica dust produces quite definite fibrotic changes in the lungs, a process known in general, and without reference to the particular type of dust involved, as pneumonoconiosis. The condition that results is called anthracosis when it is due to coal dust, silicosis when it is due to silica dust. Both anthracosis and silicosis increase susceptibility to acute respiratory diseases, such as bronchitis and pneumonia; but silicosis also predisposes to tuberculosis, while anthracosis does not. Krause believes that the peculiar effect of the silica dust is due largely to the fact that dust of this type is less readily removed from the lung and therefore produces a higher degree of fibrosis, with consequent blocking of the lymph channels of the lung. English students of this problem are inclined to postulate the formation of colloidal silica, which they believe exerts a specific chemical effect on the cells of the lung tissue.[3] Whatever the explanation, the facts are very clear. It is among metal miners, marble and granite workers, sand-blasters, potters, grinders and polishers—the industries exposed to silica dust—that industrial tuberculosis becomes of supreme importance.

TABLE 2.—*Mortality from Pulmonary Tuberculosis Among the Employees of a Connecticut Ax Factory as Compared with That of the Population of Adjacent Towns and of the State as a Whole, 1900-1919*

	Deaths per 100,000
State of Connecticut	150
State of Connecticut, male population	170
Ax factory district (three towns)	200
Employees of ax factory (all)	650
Employees of ax factory, polishers and grinders	1,900
Employees of ax factory, all others	160

1. Hoffman, F. L.: The Problem of Dust Phthisis in the Granite Stone Industry, Bull. 293, U. S. Bureau of Labor Statistics, May, 1922.
2. Drury, W. H.: The Incidence of Tuberculosis Among Polishers and Grinders in an Ax Factory, Pub. Health Rep. **36**: 159 (Feb. 4) 1921.
3. An excellent summary of the literature on the pathology of silicosis is given by Greenburg, L.: Studies on the Industrial Dust Problem, Pub. Health Rep. **40**: 291 (Feb. 13) 1925.

METHODS OF CONTROL

From the standpoint of practical control, the first problem to be considered in connection with such dust and poison hazards as those which have been discussed in preceding pages is the possibility of eliminating the original source of the danger. In the case of lead poisoning among painters, for example, the only really satisfactory procedure is the substitution of zinc paints for the poisonous lead compounds, such as has been brought about to a limited degree through legal regulations in force in France.

TABLE 3.—*Efficiency of Respirator and Helmet in Controlling the Dust Content of Air from a Sand-Blast Chamber*

Source of Air	Average Dust Particles per Cubic Foot
Untreated air of chamber	6,880,000
Air passed through respirator alone	4,549,000
Air passed through helmet and respirator	2,047,000
Air passed through helmet alone, but with positive air supply	368,000
Air passed through helmet with positive air supply and respirator	156,000

Again, the harmful substance may be used but may be handled in enclosed containers so that its escape into the atmosphere is minimized. In the manufacture of white lead, many processes are now carried out under water or oil, so that practically no dust need be present in the air of the workroom; and many benzene processes are similarly rendered safe by carrying them out in a system of closed containers.

Dusty trades may also be rendered less hazardous by the use of wet or enclosed processes. In the South African mines, the use of water sprays has cut the dust content of the air to less than a tenth of its former figure. In 1912, 32 per cent. of a typical group of these miners showed silicosis or tuberculosis; in 1923, only 3 per cent. of a similar group were affected. A more general mode of protection is the installation of systems of special exhaust ventilation such as are used in good grinding and polishing shops, where hoods are placed over (or under) the wheels and connected by ducts with powerful exhaust fans. The chief conditions essential to the success of such a system are four: the design of the hoods themselves so that the point where the dust is generated may be covered as completely as possible without interfering with the work, and as closely as possible so that a full suction velocity may be maintained; the arrangement of the suction draft so that it may operate with and not against the centrifugal force which throws the dust particles from the wheel; the elimination of all obstacles between the hood and the main exhaust duct which may decrease the velocity of suction, and the maintenance of an adequate suction head in the main exhaust duct itself.

Observations made by Greenburg and myself show that such systems of special exhaust ventilation may keep the air of a grinding shop almost as free from dust as the atmosphere of an ordinary room. In one typical workshop, with forty-nine polishing wheels more or less constantly in operation, the dust content of the air was kept down to 200,000 particles per cubic foot with the exhaust system in operation, while, when the velocity of the exhaust fan was reduced, the count rose to 863,000 particles.[4]

Finally, in certain industrial processes, as in packing operations, in marble and granite workings, and in the sand-blasting of large castings, it is impossible by any of the means previously described to keep the air of the workplace free from dangerous concentrations of mineral and metallic (or poisonous) dusts. In such cases as this, the only alternative is the wearing of respirators that filter out the dust particles from the air before it is drawn into the respiratory tract, or of helmets that exclude the dusty atmosphere more or less completely from the mouth and nose and supply pure air for breathing from some other source. All such devices are uncomfortable and irksome to the wearer, and the necessity for using them should be avoided wherever possible by the installation of the other devices which have been considered above. In certain employments, however, the respirator or helmet offers the only possible means of protection.

How effective these devices may be (particularly the helmet with positive air supply) is indicated by Table 3, from studies conducted in a Bridgeport sand-blast chamber.[5]

Respirators for protection against dusts are usually made of rubber, fitting over the mouth and nose and including a filtering layer of cloth or sponge. Their efficiency varies widely and requires careful study in the individual case. The use of a helmet supplied through a tube with fresh air, creating an outward current through its openings, will often, perhaps, serve better than any of these filtering devices, and will prove more comfortable when the worker remains in a given place, so that the air supply for the helmet can be easily maintained.

We cannot, of course, assume that the dust hazard has been effectively controlled merely because one or the other of these protective devices has been introduced. Enclosed processes, wet processes, local exhaust systems and respirators may work efficiently or inefficiently, according to their construction and operation in relation to a given situation. In the very ax factory, cited above, which showed such an appalling death rate, a wet grinding process was in use; and this case furnished a striking demonstration of the fact that even wet grinding may prove an exceedingly hazardous occupation, if conducted on soft wheels of natural sandstone and without adequate control.

TABLE 4.—*Comparative Mortality from Pulmonary Tuberculosis in Certain Occupations*

	England and Wales, 1910-1912
All occupied males	141
Clergymen	45
Coal miners	75
Messengers, porters, watchmen	252
Seamen, etc., merchant service	257
Potters, earthenware manufacturers*	282
Tool, scissors, file, saw, needle makers*	306
Inn, hotel servants	309
Lead miners*	335
Costermongers, hawkers	419
File makers*	434
Cutlers, scissors makers*	466
Tin miners*	678

* Exposed to silica dust.

Nor is it at all possible to judge of the seriousness of a dust hazard by mere visual inspection. An abrasive factory at Niagara Falls containing 160,000,000 parti-

4. Winslow, C.-E. A.; Greenburg, L., and Angermeyer, H. C.: Standards for Measuring the Efficiency of Exhaust Systems in Polishing Shops, Pub. Health Rep. **34**: 427 (March 7) 1919.

5. Winslow, C.-E. A.; Greenburg, L., and Reeves, E. H.: The Efficiency of Certain Devices Used for the Protection of Sand Blasters Against the Dust Hazard, Pub. Health Rep. **35**: 518 (March 5) 1920.

cles per cubic foot did not look, when I inspected it, any dustier than many an ordinary workroom. Determination of the actual dust content of the air by analytic methods furnishes the only key to the problem.

What we need is, first of all, the discovery of the factories in which a dust hazard may apparently exist; secondly, a study of conditions by competent analysts for the determination of the actual dust content of the air; thirdly, the development of protective measures along one or the other of the lines laid down above.

For the determination of dust content and for counsel in regard to remedial measures we must call on city and state health departments, on state labor departments and on the United States Public Health Service (which has played a leading part in the study of industrial dusts during the last twenty years). It is to the medical profession, however, that we must primarily look for the discovery of the danger spots that require special attention.

To the industrial physician, if he be a real industrial physician and not merely a doctor who practices medicine in a factory, the problem of silicosis is one of primary importance. The private practitioner may, however, render invaluable service in the elimination of this hazard by careful inquiry as to the previous occupations of patients who come to him for the treatment of respiratory disease. In many states, silicosis is a reportable disease, in some, it comes under the provisions of the Compensation Act. In all, there will be opportunity for cooperation with public authorities and employers of labor in the elimination of dust hazards, if the physician is alert in the tracing of a relationship between occupation and respiratory disease.

That industrial tuberculosis is by no means a minor hazard, affecting only a few isolated groups of workmen, is clearly seen by reference to the reports of the registrar-general of England and Wales, which give data far more complete than any which are available in the United States. The pertinent data from the last report (for 1910-1912) are cited in Table 4.

These figures are not in terms of deaths per hundred thousand but in the form of arbitrary comparative mortality figures. I have therefore included at the top of the table the comparable figure for all occupied males and the lowest figure given, that for clergymen; and also the figure for coal miners to compare with that for tin miners below. It will be noted that the rate for tin miners (with silica dust) is nearly ten times that for coal miners (without silica dust). I have included in this table every occupation given by the registrar-general with a comparative mortality figure for tuberculosis over 250; and it will be noted that, of the ten occupations that exhibit such excessive rates, six are occupations exposed to silica dust, including all of the three in excess of 420.

CONCLUSION

There has been much argument, of late, in regard to the relative weight of various factors in the determination of the prevalence of tuberculosis. I am familiar with no single factor in the entire list, whether hereditary or environmental, which shows so clear and so striking a statistical relation to the tuberculosis death rate as exposure to the inhalation of silicious dusts. Surely, we have here a problem that deserves far more attention from the medical profession than it has received in the past.

ABSTRACT OF DISCUSSION

DR. L. R. THOMPSON, Washington, D. C.: The importance of the subject of factory ventilation and industrial tuberculosis is too little recognized by the medical profession, perhaps largely for several reasons: First, in our early medical training occupation and its relation to disease is completely disregarded in the teaching of medicine. Second, in our diagnosis of disease we seldom, if ever, inquire into the occupation of the patient or consider it as bearing on the symptoms which he presents. Third, although we have accepted the making out of a death certificate as a matter of daily routine, and have educated ourselves in the correct method of reporting causes of death, we still give no thought in entering the occupation, ignoring entirely the immense practical information that could be obtained from a fairly correct correlation between occupation and disease. Dr. Winslow has brought out very clearly the relationship between dust, like coal and cement, and an excessive incidence of acute respiratory diseases among workers exposed to those dusts. If we compare mortality data from an occupational standpoint with industrial sickness data, we are immediately struck by their dissimilarity. While tuberculosis is by far the most important cause of death, other respiratory diseases, such as colds, are far more important in causing absence from work on account of sickness, and after all, the causes that keep a man away from work during his industrial life are of vital economic importance to him. Dust is one of the most important factors in contributing to the higher rate of sickness in the respiratory group of diseases. In an unpublished study of ours of sickness and the number of industrial accidents that disabled for two working days or longer, we found that in a cement plant the annual number of cases per thousand males due to respiratory diseases was 586, as compared to 163 in a rubber plant. In fact, the absence on account of sickness from respiratory diseases in this plant was the highest we have yet found in any industry studied. Dust is the outstanding health hazard, and I agree with Dr. Winslow on the vital importance of factory ventilation in reducing sickness from these conditions.

DR. FREDERICK L. HOFFMAN, Newark, N. J.: Some of those present may not be aware of the fact that a bill in the state of New York, proposing to make silicosis a compensable disease, was recently vetoed by Governor Smith. It was a measure of great intrinsic merit, attempting to deal effectively with a problem that is at present neglected and unsolved. There was no opposition to the general principle, but organized labor opposed the restrictions included in the bill, which would have been a safeguard against serious possible abuses. The substitute bill proposed was too general in its nature. The bill in question was, therefore, a compromise and deserved to pass. In the discussion on this bill before the legislative committee, it was clearly shown that the medical profession has been derelict in giving proper attention to silicosis, as well as to silicosis and tuberculosis in their relation to each other. Silicosis is a distinct type of lung disease and is not infectious. I found in my investigations in Vermont that the wives of workers in stone dust who had died from silicosis had not contracted the disease. In the nonsilicotic lime stone quarries of Indiana a similar investigation revealed a considerable amount of true tuberculosis, among the men as well as among the wives. Until it is clearly recognized that silicosis in its beginning is not tuberculosis, however much the symptoms may resemble tuberculosis, little progress will be made in dealing effectively with this insidious affection. I voice very strongly the concluding sentence of Dr. Winslow's paper that the profession should take a more serious and painstaking interest in this problem. It is by far the most important dust problem that confronts the medical profession today. Until it is made a compensable disease, we shall not make the progress that we are in need of. Enough evidence on the subject is in print, but it is, broadly speaking, entirely neglected. We are in need of the whole-hearted cooperation of the medical profession to gain the public support for a silicosis law that will prove satisfactory to all concerned. By

his veto, Governor Smith deprived hundreds of deserving workmen of their just dues. No new legislation can possibly hope to meet all the objections that can be raised against it. The silicosis bill of 1925 was a meritorious statute and should have been enacted into law.

DR. R. D. VREELAND, Newark, N. J.: There are many difficult problems and phases in the study of ventilation, especially in a store with its many varied departments, which practically embrace all types and conditions that are usually found. The first principle to be remembered is that air currents act on walls, ceilings, etc. Where there is no exhaust (suction) ventilation, the first problem is to see that the inlet is on the windward side and then so arrange the electric fans pointing at angles upward as to move the hot air blanket toward the outlet. This at the same time does away with drafts on the employees, which are especially harmful in winter time. All types of windows and means of inlet and outlet air, speaking purely from the aeration point, have their objectionable features. We have found the best type so far to be the "Browne" window, with a separate whole upper sash hinged at the bottom to open inward to such varying degrees as necessary; to these we attach side curtains to prevent the side draft which, if not prevented, shoots out and strikes all in the vicinity, with the usual result that the windows are closed by those near them when most needed by those away from them. The moving of the hot air blanket also means the lowering of the room temperature, and it has been proved that a difference of a few degrees in temperature makes a difference in efficiency. This is why so many different kinds of ventilation are unsatisfactory, as they simply shoot the air toward the ceiling and it rebounds on those below. When only a few degrees difference in temperature means a saving in efficiency of from 5 to 10 per cent., what does the added saving mean not only to the employer but to the employee (in loss of time, wages, and lowered vitality) when conditions are correct and the machine we call our body is running smoothly and efficiently? As an example, we reduced the percentage of workers out because of illness in one department alone nearly 15 per cent. by these means.

DR. P. H. HOURIGAN, Buffalo: Physicians in the industries find silicosis in various stages, and I believe it is much more common than we ordinarily consider it. The varieties of occupations which, when closely analyzed, show marked exposure to dust, would lead one to readily find conditions to support this statement. We had, in our own industry, a beautiful case of anthracosis. The man had been working for twenty years, taking care of the ashes coming from the boiler shop. Just outside the door where he dumped the ashes was a large pile of fine, dusty coal, probably thousands of tons. This man happened to die suddenly where he might have been exposed to hydrocyanic acid gas. In the postmortem examination, necessitated by the hydrocyanic gas exposure, we found a well advanced case of anthracosis. The apex of the right lung showed some scar tissue which might have been an arrested case of tuberculosis. During the twenty years that the man had worked for us, he had made no complaint of this condition and had lost only about 25 per cent. of the time usually lost by workingmen because of sickness.

DR. EARL F. SMITH, Pittsburgh: I have not heard mentioned the advantage of the air dilution problem. In the factory with which I am connected they have all the mechanical apparatus that has been suggested for the removal of dust, but there are many mechanical objections to all these forms of suction apparatus. They may look all right and be perfectly installed apparently, and yet there are so many little things that can go wrong that they do not work in a practical manner, as proved by a dust count; but we have at all times a natural circulation of air from the outside, and if we try to depend entirely on the mechanical suction apparatus we withdraw the air from the machine and are apt to be only stirring up the air in the room, keeping it in circulation. The important point is to keep windows open so as to get a fresh air supply and get dilution and keep the dust down.

DR. C.-E. A. WINSLOW, New Haven, Conn.: I think this discussion throws real light on the whole question of industrial tuberculosis and particularly on the underlying pathologic origin of the difference in the effects of different kinds of dust. It seems to me the fact that the acute respiratory diseases, so common among cement workers, are not so severe among granite cutters is in favor of the view of Dr. Krause's that one type of dust produces acute inflammatory reaction and is then eliminated, while the silica dust remains in the lung tissues, causing less inflammation and more fibrosis. The point that Dr. Hoffman made that silicosis is not a communicable disease is important. In Connecticut, communicable diseases are specifically excluded from compensation and several cases of so-called industrial tuberculosis have failed to receive compensation on the very proper contention that tuberculosis is classified as a communicable disease. Silicosis, however, is not a communicable disease, and if the distinction between silicosis and tuberculosis had been kept in mind the result might have been different. There are naturally honest differences of opinion as to procedure in these matters. I feel personally that Governor Smith was entirely right in vetoing that New York bill of which Dr. Hoffman spoke. In fact, I wrote him a strong letter urging him to do so. It seemed to me that this bill was so framed and hedged about with so many qualifications no one could get compensation under it, and its passage would merely have stood in the way of the future enactment of a bill under which compensation could really be secured.

Clinical Notes, Suggestions, and New Instruments

CHOREA INSANIENS: REPORT OF A CASE WITH RECOVERY

ORLANDO H. PETTY, M.D., AND HOWARD W. SCHAFFER, M.D.,
PHILADELPHIA

Osler[1] writes of having seen two cases of chorea insaniens and reports twelve other cases from the literature. All these were fatal and, at necropsy, showed vegetations of the mitral valves. While the mortality of this type of chorea is very high, Osler calls attention to the fact that only the more severe cases, usually ending in death, are reported.

The case reported here is of a white girl, aged 12 years. Her mother had chorea at 13 years of age. An aunt on her mother's side died of chorea, at the age of 14, and an aunt and cousin of her mother's also suffered from chorea in youth.

The girl had had measles, chickenpox, scarlet fever, influenza and, at the age of 7, a glandular fever of short duration. She had had several attacks of tonsillitis. During the last attack, Dec. 14, 1924, she was in bed three days. She was then up and active for about ten days, when she developed painful swollen joints in the right great toe and in the right knee. One week after the beginning of the joint trouble, she developed twitching; this continued to get worse, and by the fourth week was so severe that she could not talk. At no time had she been frightened or subjected to severe nervous strain. During this illness, from December 14 to the time of her admission to the hospital, Feb. 6, 1925, she was treated by a physician who also practices chiropractic.

On admission to the hospital she was delirious, poorly nourished, continuously tossing from one side of bed to other, rolling from face to back, and arching her body in opisthotonos, with continuous choreiform contractions of the muscles of the body, face and extremities. She could not talk, but almost constantly would emit peculiar cries with her choreiform movements. The skin was dry, the lips were covered with sordes, and the tongue and buccal mucosa were as dry as parchment. The pupils were normal, and there was no conjunctivitis. The temperature was 106 F.; the pulse, 140. The lungs and abdomen were normal. The heart was normal

1. Osler: On Chorea and Choreiform Affections, 1894.

except for an increase in rate. The throat was not congested; the tonsils were enlarged, but not acutely inflamed. There were no eruptions on the skin and no subcutaneous nodules. The joints were apparently normal, but the mental and physical condition of the patient made impossible the determination of tenderness or of limitation of motion. She was unable to swallow and, for three weeks, was fed by a stomach tube passed through the nose. To control the irritated nervous system sufficiently to induce a few hours' sleep required 60 grains (4 gm.) of barbital and 8½ grains (0.6 gm.) of morphin during the first four days. The four days following required 7½ grains (0.5 gm.) of pantopon. Phenobarbital (luminal) and bromids were tried and seemed to have little, if any, effect. Barbital was continued in small doses for several weeks, as this seemed to be the most effective drug, after the delirium had cleared up, in controlling the choreiform movements. During convalescence, she developed many large subcutaneous abscesses on the scalp, back and extremities, especially on the hands and fingers. Her temperature gradually subsided, and about the thirtieth day of her stay in the hospital, her condition became normal. During the febrile period, the urine showed a faint trace of albumin; no casts or red blood cells were found at any time. A blood examination revealed a moderate anemia, with a slight polymorphonuclear leukocytosis, but no increase in eosinophils. She gained rapidly in strength and weight, after the fever had subsided, and was discharged from the hospital forty days after admission. At no time did she present any evidence of valvular disease. Six months after her illness, she was leading the life of a normal child of her age. Her heart was of normal size, and its sounds and rate were normal. She had no tendency to be nervous or to stammer, and showed no signs of chorea.

The points of especial interest in this case are: (1) the large amount of hypnotics required to produce a physiologic effect; (2) the feeding of food and large amounts of liquids by a stomach tube for three weeks, and (3) the complete recovery of the patient, in a short period of time, from a disease in which the prognosis was so grave.

1529 Pine Street.

A TRANSFUSION CANNULA WITH STOPPER

MULTIPLE SYRINGE-CANNULA METHOD WITHOUT AN ASSISTANT

HENRY F. STOLL, M.D., HARTFORD, CONN.

The method of transfusion here described requires only two Unger transfusion needles provided with stoppers, and half a dozen record syringes. A fine chain attached to the guard and fastened to the skin by adhesive plaster insures the cannula remaining within the vein. The patient receives warm blood that has come in contact with a minimum amount of foreign material. The only assistant needed is some one to wash the syringes.

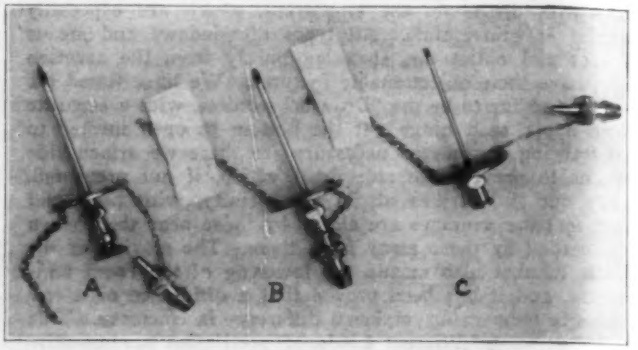
The original feature of this method is the employment of a stopper that occludes the cannula when it is not connected with a syringe, and the "guy chain" that prevents the cannula from slipping out of the vein. The stopper is attached to the guard by a short, fine chain in such a way that the "cannula end" is upright, thus making its introduction easy.

Donor and patient are placed side by side about 2 feet apart, the adjacent arms resting on a board about 15 inches (37 cm.) wide that extends from one table to the other. A small table for syringes, gauze, etc., is placed between patient and donor, and behind this a larger table on which are three basins, two for sterile water and one for saline solution for washing the syringes.

The cannulas are introduced in the usual manner in the donor's and patient's veins and occluded by the stoppers, the guy chains made taut and fastened by adhesive plaster to the skin, and the transfusion proceeds as follows:

The stopper is removed from the donor's cannula and five 20 c.c. record syringes, each containing from 2 to 3 c.c. of physiologic sodium chlorid solution, are rapidly filled with blood and placed on the table between donor and patient. The stopper is then inserted into the donor's cannula, the one occluding the recipient's cannula is withdrawn, and the contents of the syringes (100 c.c.) are quickly injected. The syringes are washed as emptied, and again refilled. This amount of saline solution prevents clotting for at least two minutes—considerably longer than is required to transfer 100 c.c. of blood.

Post-transfusion reactions in the main appear to be due to three factors acting singly or in combination: (1) improperly matched blood; (2) the use of complicated, and consequently improperly cleaned, apparatus, or (3) changes in the blood transfused incident to chilling, traumatization of the cells from manipulation (stirring and filtering), and contact with foreign material (especially certain brands of rubber tubing that have toxic properties when new).



A, needle and cannula ready for introduction into vein; *B*, cannula within the vein, occluded with stopper; the guy chain held by the adhesive plaster insures the cannula remaining in the vein; *C*, stopper removed preparatory to attaching syringe.

Transfusion by the method here described eliminates the factors mentioned under 2 and 3, and, if the first syringeful is injected slowly, early symptoms of blood incompatibility are recognized, and the transfusion can be stopped before any harm is done.

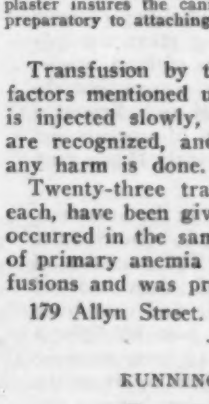
Twenty-three transfusions, averaging more than 570 c.c. each, have been given by this method with two chills, which occurred in the same patient, who was in the terminal stage of primary anemia and who had had several previous transfusions and was probably in a refractory state.

179 Allyn Street.

RUNNING BOW LINE TOURNIQUET*

FILIP C. FORSBECK, M.D., MADISON, WIS.

The ordinary piece of rubber tubing used as a tourniquet in intravenous medication and drawing of blood samples has certain disadvantages. As it is commonly used, the binding loop forms an undesirable bulging against the skin, it is released with a jerk that is apt to cause the needle to leave the vein, and it takes some care to keep the free ends from the sterile field.



Running bow line tourniquet.

The running bow line tourniquet consists of the usual rubber tubing with a 2 or 3 inch loop at one end. This can be made with a heavy rubber band or by sewing.

The open end is slipped through the loop so as to form a running bow line just above the elbow. Traction is exerted on both ends, and the loop is pushed down snugly against the arm and released. It will hold firmly. Steady pressure against the loop with the thumb will release the tube with a smooth action and the tube will remain loosely in position until it is convenient for the operator to remove it.

* From the State of Wisconsin General Hospital, University of Wisconsin.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

THEOCALCIN.—A double salt or mixture of calcium theobromine ($[C_7H_7O_2N_4]_2Ca$) and calcium salicylate ($[C_7H_5O_3]_2Ca$). It contains not less than 44 per cent. of theobromine.

Actions and Uses.—Theocalcin acts like theobromine. It is claimed to be less likely to produce gastric irritation than the official theobromine sodio-salicylate.

Dosage.—Average dose, from 0.5 to 1 Gm. (7 to 15 grains) three times a day.

Manufactured by E. Bilhuber, Inc., New York. U. S. patent 1,547,698 (July 28, 1925; expires 1942). U. S. trademark No. 194,898.

Theocalcin Tablets 7½ Grains.

Theocalcin is a white, amorphous powder, having a saline taste. It is partly soluble in water.

An aqueous solution of theocalcin is alkaline to phenolphthalein. An aqueous solution of theocalcin (1:100), slightly acidulated with acetic acid, becomes violet on the addition of ferric chloride solution. Transfer about 0.05 Gm. of theocalcin to a test tube, add 3 Cc. of diluted acetic acid and heat to boiling; cool the contents of the test tube, filter and to the filtrate add 0.5 Cc. of ammonium oxalate solution: a precipitate forms, which dissolves on addition of 1 Cc. of diluted hydrochloric acid. To about 0.05 Gm. of the precipitate obtained in the assay for theobromine, add 1 Cc. of hydrochloric acid and about 0.1 Gm. of potassium chlorate and evaporate to dryness on a water bath: a reddish yellow residue remains, which becomes purple when moistened with a drop of ammonia water.

Dried to constant weight at 110 C., theocalcin loses not more than 5 per cent. (*water*). Treat 0.1 Gm. theocalcin with 2 Cc. of sulphuric acid: no effervescence occurs (*carbonate*) nor is more than a slight color produced (*readily carbonizable substances*). Mix 1 Gm. of theocalcin with 10 Cc. of distilled water, add a few cubic centimeters of sodium hydroxide solution (filter if necessary) and shake the mixture with 10 Cc. of chloroform; separate the chloroform layer, evaporate it to dryness on a water bath and dry to constant weight at 80 C.: the weight of the residue so obtained does not exceed 0.005 Gm. (*caffeine*).

Suspend about 2 Gm. of theocalcin, accurately weighed, in 75 Cc. of water and add diluted hydrochloric acid until the solution is acid to phenolphthalein. Warm gently, then add sodium carbonate solution until the calcium is completely precipitated, avoiding a large excess. Filter off the calcium carbonate; evaporate the combined filtrate and washings on a steam bath to 20 Cc. Add diluted hydrochloric acid, drop by drop, until just acid (to phenolphthalein), then dilute ammonia water until slightly alkaline. Allow to stand at from 20 to 25 C. for three hours, stirring occasionally. Transfer the precipitate of theobromine to a tared gooch crucible. Wash the precipitate and filter with four successive portions of 5 Cc. each of ice cold distilled water and dry to constant weight at 100 C. To the weight of the precipitate thus obtained, add 0.14 Gm. The total weight corresponds to not less than 44 per cent. of the weight of theocalcin taken. About 0.2 Gm. of the precipitate obtained in the assay for theobromine volatilizes when slowly heated, leaving only a negligible residue.

MERCURIC OXYCYANIDE (See New and Nonofficial Remedies, 1925, p. 228).

The following dosage forms have been accepted:

Sterile Ampules of Mercury Oxycyanide, 0.008 Gm.: Each contains 5 Cc. of solution representing 0.008 Gm. (⅛ grain) of mercuric oxycyanide-N. N. R.

Prepared by the Swan-Myers Co., Indianapolis.

Sterile Ampules of Mercury Oxycyanide 0.01 Gm.: Each contains 5 Cc. of solution, representing 0.01 Gm. (⅙ grain) of mercuric oxycyanide-N. N. R.

Prepared by the Swan-Myers Co., Indianapolis.

Sterile Ampules Mercury Oxycyanide, 0.016 Gm.: Each contains 3 Cc. of solution, representing 0.016 Gm. (¼ grain) of mercuric oxycyanide-N. N. R.

Prepared by the Swan-Myers Co., Indianapolis.

TETRAIODOPHTHALEIN SODIUM.—Tetraiodophthaleinis Sodium.—Tetraiodophenolphthalein Sodium.—$NaOOC.C_6H_4C:C_6H_2I_2O.C_6H_2I_2ONa$. The sodium salt of a dibasic dye, tetraiodophenolphthalein. Tetraiodophthalein sodium contains not less than 53 per cent. of iodine.

Actions and Uses.—Tetraiodophthalein sodium is used for the roentgenologic examination of the gallbladder. Following the intravenous injection or, if decomposition is avoided, the oral administration, the substance appears in the normal gallbladder in sufficient concentration to cast a shadow to the roentgen ray. After injection, a few of the patients may have unpleasant sensations, such as dizziness, nausea, various body pains, and fall in blood pressure. The transitory fall in blood pressure may be relieved by the administration of from 0.5 to 1 Cc. of epinephrine hydrochloride solution (1:1,000) intramuscularly. The use of tetraiodophthalein sodium is in the experimental stage, and workers are cautioned as to the selection of types of cases in which it is indicated and its possible toxicity in large doses. More than 1,000 patients, however, are reported to have been examined by this method with no deaths.

Dosage.—To visualize the gallbladder in a patient weighing between 115 and 160 pounds (52 and 72.6 kg.), 3 Gm. of tetraiodophthalein sodium is dissolved in 24 Cc., or 3.5 Gm. of tetraiodophthalein sodium solution is dissolved in 28 Cc. of freshly distilled water; the solution is then sterilized by heating the container in boiling water for twenty minutes. For patients weighing less than 115 pounds (52 kg.), the amount of salt is to be reduced. The solution is injected intravenously in two doses, one-half hour apart in the morning before breakfast. Care must be taken not to allow extravasation on account of tissue necrosis. Breakfast is omitted. At noon a glass of milk is permitted, and the evening meal is allowed as usual. Water by mouth it allowed at all times.

Tetraiodophthalein sodium may be administered orally in the form of capsules or pills coated with phenyl salicylate. The average dose is 5 Gm., administered in five capsules or pills of 1 Gm. each during the evening meal. Breakfast is omitted. Since the capsules may not be dissolved, any evidence of abnormality found by the oral method should be checked up by the intravenous method.

Tetraiodophthalein sodium is a dark blue, somewhat hygroscopic, crystalline powder, odorless. It is soluble in water and in alcohol. The aqueous solution (1:300) has a reaction of p_H 7 to 9.

Dissolve 1 Gm. of tetraiodophthalein sodium in 10 Cc. of water: a clear solution results. Add diluted hydrochloric acid, drop by drop, to 1 Cc. of a 10 per cent. aqueous solution until the liquid is acid in reaction: a cream colored precipitate is formed. Add sodium hydroxide solution to this mixture in large excess: a purple color first forms and then disappears. Intimately mix 0.1 Gm. of the salt with 1 Gm. of anhydrous sodium carbonate and heat to fusion; cool the fusion and dissolve it in diluted hydrochloric acid and filter; add a few drops of hydrogen peroxide solution and agitate the mixture with a few cubic centimeters of chloroform: the chloroform layer is violet (*iodine*).

Weigh accurately about 0.25 Gm. of tetraiodophthalein sodium in a stoppered weighing bottle. Transfer it to a 300 Cc. Kjehldahl flask, add 11 Cc. of absolute alcohol and connect the flask with a reflux Liebig condenser cooled with tap water. Warm slightly and begin the introduction of sodium metal. The sodium metal is prepared by rolling 2.3 Gm. of the metal, free from surface film, between paper into small (from ten to fifteen pieces) rods. This should be kept in a tightly stoppered weighing bottle during the operation. The sodium metal is added through the top of the condenser, one piece at a time. After several pieces have been added, there may be two or three undissolved pieces in the flask at one time. The addition of the sodium should occupy between thirty and forty minutes. Gentle heating may be required to dissolve the last pieces of sodium (*caution*). After the sodium has been all added, reflux the mixture for one hour and then allow to cool. Add water, 1 Cc. at a time, through the top of the condenser, until the sodium is taken up. Then disconnect the flask and add more water until the precipitate is dissolved. Transfer the liquid to a 500 Cc. Erlenmeyer flask and dilute to 200 Cc.; acidify with 20 per cent. nitric acid solution and add 25 Cc. tenth-normal silver nitrate and 2 Cc. ferric nitrate indicator. Titrate the unconsumed silver nitrate with tenth-normal ammonium thiocyanate: the amount of iodine found is not less than 53 per cent. (If the weight of salt taken for the assay appreciably exceeds 0.25 Gm., a proportional change in the amount of absolute alcohol and sodium metal must be made.)

Iodeikon.—A brand of tetraiodophthalein sodium-N. N. R.

Manufactured by the Mallinckrodt Chemical Works, St. Louis. No U. S. patent or trademark.

Iodeikon, 3.5 Gm. Ampules.

Tetraiodophthalein Sodium-"National."—A brand of tetraiodophthalein sodium-N. N. R.

Manufactured by the National Aniline & Chemical Co., New York. No U. S. patent or trademark.

Tetraiodophthalein Sodium-"National" Vials 3.5 Gm.

VI-MAL-DEX (ORANGE). — A mixture containing, approximately, maltose, 28 per cent.; dextrose, 10 per cent.; dextrin, 48 per cent.; orange juice sugars, 9 per cent.; citric acid, 1 per cent.; ash, 1 per cent.; moisture, 3 per cent. One hundred Gm. contains the equivalent of 93.5 Cc. (1 ounce is the equivalent of 0.85 fluidounce) of fresh orange juice.

Actions and Uses.—Vi-Mal-Dex (Orange) is proposed as a carbohydrate food for use in the feeding of infants. In addition to the carbohydrates, dextrose, maltose and dextrin, it presents the antiscorbutic properties of orange juice.

The nutritive value of 100 Gm. corresponds, approximately, to 390 calories.

Dosage.—To prepare for use, vi-mal-dex (orange) is mixed with water or milk. When 1 ounce vi-mal-dex (orange) is added to 1 quart of a milk dilution (milk, 20 fluidounces; water, 12 fluidounces), the hydrogen-ion concentration is increased from p_H 5.56 to 6.25.

Manufactured by the Merrell-Soule Co., Syracuse, N. Y. No U. S. patent. U. S. trademark applied for.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 26, 1925

THE ANTIRACHITIC VITAMIN

The widespread occurrence of rickets in this country, even in times of peace and under conditions of national prosperity that ought to preclude poverty as the predominant agency in the genesis of the disease, should direct attention to the evident lack of adequate protective or antirachitic factors in the environment and regimen of those affected. Rickets is not an intractable disorder; it is preventable or curable, as the case may be, by sunshine and its equivalents, and likewise by suitable dietary ingredients. The active agent functions by promoting normal calcium anabolism, particularly when the supply of the element is not very abundant; consequently, it may relieve rickets, promote growth, or simply prevent excessive loss of lime from the body. As a recent writer has expressed it, the specific capacity in which the antirachitic factor functions depends on the condition of the individual with respect both to age and to nutrition, and on the composition of the diet furnished.

Sunshine, with its ultraviolet rays, is not as universally available in the conditions of present-day living in temperate climates as might be expected. The atmosphere, as well as our artificial shelters with their windows of glass, tends to exclude the potent rays from impingement on the person that needs their benefits.[1] Artificial sunshine is not commonly available; hence the food sources of antirachitic vitamin attain preeminent importance in relation to national welfare. The inquisitive investigator of the present generation is not content, however, with the discovery that one or another of the familiar food products is antirachitically potent. His persistent search is ceaselessly directed toward the chemical individual or unit that may be identified as vitamin D. Sufficient progress has been made to permit some of the significant steps to be recorded.

For some time it has been known that the antirachitic factor is stable toward saponification. This at once takes it out of the class of true fats, with which it is so commonly associated in nature. The sterols, among which cholesterol is most familiar to physicians, are included among the nonsaponifiable components of fats; but there is now an abundance of evidence that the antirachitic factor is not cholesterol or the phytosterols of plants, though they can readily be made potent by irradiation with ultraviolet rays, whereby vitamin D can be artificially created. Nelson and Steenbock[2] of the University of Wisconsin have recently confirmed the statement that the compounds responsible for the antiophthalmic and antirachitic properties of cod liver oil are not precipitable by the cholesterol precipitant digitonin. This narrows the search for the effective vitamin, so that we may confidently expect a more definite identification of a highly essential food factor in the near future. It is a real step in advance to have excluded some of the common companions of the potent substance as it occurs in natural products.

1. Hess, A. F.: The Ultraviolet Rays of the Sun, J. A. M. A. **84**: 1033 (April 4) 1925.

CYANOSIS

Strictly speaking, cyanosis is a symptom in which a bluish hue is imparted to some part of the cutaneous surface of the body. There was a time when the inconsistent expression "blue jaundice" was applied to the same manifestation. To physicians the word "cyanosis" probably suggests a disorder characterized by malformation of the heart or some other pathologic condition leading to imperfect arterialization of the blood; hence the latter retains a "venous" hue. Such cyanosis usually is attributed to an increase in the oxygen unsaturation of the blood to a certain value. Sometimes the bluish color characteristic of a cyanotic condition is confined to some small part of the body. This may happen when there is a diminished flow of blood to it, so that with the continued demands of the tissues for oxygen a consequent increase in the amount of reduced hemoglobin in the blood, the factor responsible for the bluish color, ensues. It has been asserted[3] that certain features, although themselves incapable of producing cyanosis, may influence the degree of oxygen unsaturation necessary to impart color to the skin, and modify the intensity of the blue produced. Such a factor is the number, width and length of blood-filled capillaries per unit of skin area.

Goldschmidt and Light[4] of the University of Pennsylvania have recently demonstrated how the color of the skin may vary, and actually assume a truly cyanotic hue, without any change in the oxygen saturation of the hemoglobin in the vessels of the part involved. This happens frequently when there is an engorgement of the latter whose circulating fluid,

2. Nelson, E. M., and Steenbock, H.: Fat-Soluble Vitamins, XXIV, The Non-Precipitability of the Antiophthalmic and Antirachitic Properties from Cod Liver Oil by Digitonin, J. Biol. Chem. **64**: 299 (June) 1925.
3. Lundagaard, C., and Van Slyke, D. D.: Cyanosis, Baltimore, 1923.
4. Goldschmidt, L., and Light, A. B.: A Cyanosis Unrelated to Oxygen Unsaturation, Produced by Increased Peripheral Venous Pressure, Am. J. Physiol. **73**: 173 (June) 1925.

unduly abundant in volume, imparts the bluish color to the superimposed skin. It can be demonstrated when the arm is allowed to hang down and is kept stationary. In this way there results a dilatation of the capillaries and subpapillary venules because of the increased hydrostatic pressure imposed on the blood in the veins. The increase tending to inhibit the venous outflow of blood is balanced by a like but opposite pressure on the arterial limb of the vascular bed, thus insuring a maintenance of volume flow of blood through the hand and arm.

These studies, in which the actual composition of the blood with respect to the respiratory gases was directly determined, leave little doubt that the blueness of the skin, which is often a topic of personal comment in regard to patients, is by no means solely or always due to stasis, with a consequent depletion of oxygen in the impeded blood. The vessels whose blood transmits color to the skin, when filled in greater number and increased in width and possibly in length, may contain blood of an oxygen unsaturation no greater or even less than that flowing in constricted vessels; yet the skin may assume a bluish hue. The point to be emphasized is that not only the state of dilatation or contraction of the capillaries and the character of the blood in them, but also the condition of the small veins or venules, and possibly of the subpapillary plexus of arterioles also, determine the varying color of the skin. The tint may vary, depending on whether the capillary or the venule dilatation predominates. Pallor, pinkness or blueness of the skin may thus have a variety of underlying causes. In the absence of stasis, all cyanosis of local or general origin must be accompanied by a degree of either capillary or venule dilatation, or both, in order to be visible through the skin. Pink coloration of the skin, such as occurs with mild local heat, is reflected primarily from the capillaries. In the polycythemia associated with congenital heart disease or Vaquez' disease, the venous blood may have a normal oxygen unsaturation and contain more oxygen than normal arterial blood. Under these conditions an increase in the number and width of the skin capillaries has been observed. According to published observations,[5] the skin usually is red, but it may become bluish, particularly in a warm room. The color depends, in this case also, on the condition of the vessels rather than on the quality of the blood they contain. These findings should not let us overlook the fact, however, that the development of a blue color of the skin can likewise take place under conditions of vasoconstriction and decreased blood flow when the oxidative processes in the tissues are continued at the usual rate so that the blood becomes comparatively depleted in oxygen and assumes highly venous characteristics.

5. Fitz, Reginald: Oxford Medicine **2**: 767, 1920.

SUGARS AND SWEETNESS

It has recently been remarked that the rare sugars of the present day may be among the common sugars of the future. Such a conjecture is not entirely devoid of justifying evidence. Sucrose, as cane sugar or beet sugar, has long been available in crystalline form in a high degree of purity as an inexpensive article of commerce. At the current retail price, one cent will buy considerably more than three hundred calories of sucrose, representing the nearest approach to chemical purity of any common item in the diet of man. Only a few years ago, the much berated "glucose" was commercially available only in the form of comparatively crude syrups, but today there are indications that refined products of high purity will soon compete with the long favored sucrose under conditions that do not justify the somewhat derisive designation of "corn syrup." Lactose, or milk sugar, is marketed in large quantities. Levulose, also known as fructose, or fruit sugar, once ranked among the rarer sugars, has been produced crystalline in quantity for a great number of years; and the possibility of manufacturing levulose syrup from the Jerusalem artichoke, which contains from 12 to 14 per cent. of the carbohydrate inulin, has already been suggested.[1] The production of invert sugar syrups, containing glucose and levulose, from sucrose already is an industry of considerable proportions. The changing dietary customs in regard to sugar products is shown in the lessening prominence of honey and molasses in comparison with their rôle in the culinary arts a century ago.

In view of these circumstances it seems highly desirable to learn the special properties with which the possible saccharine competitors for human favor are endowed, so that they can be compared discriminately when occasion arises. Change is not always dictated by choice; it may be enforced by unanticipated necessity, as those who recall the sugar shortage during the World War can testify. The most prominent feature of the sugars as a class is their sweetness; yet, strangely enough, accurate information as to their relative sweetness has largely been lacking or the data have been variable. Recent studies [2] at the University of Minnesota are probably the most satisfactory contribution yet offered on the subject. If the sweetness of sucrose is rated as 100, levulose deserves a value of 173, glucose 74, maltose 32, galactose 32, and lactose (milk sugar) 16. The low sweetening power of the latter has long been known, and has made it possible to use this easily dissolved carbohydrate in large quantities where high calory intake was desired but ordinary sugar would become distasteful because of its greater sweetness. The unique sweetness of levulose has not been fully appreciated heretofore. It

1. Willaman, J. J.: Science **52**: 351, 1921.
2. Biester, A.; Wood, M. W., and Wahlin, C. S.: Carbohydrate Studies, I, The Relative Sweetness of Pure Sugars, Am. J. Physiol. **73**: 387 (July) 1925. Willaman, J. J.; Wahlin, C. S., and Biester, A.: II, The Relative Sweetness of Invert Sugar, ibid., p. 397.

accounts for the relatively high sweetness of invert sugar produced by inversion of sucrose, thereby increasing its sweet flavor about 30 per cent. It will also come as a surprise to many that "glucose," the hydrolysis product of starch, approaches cane sugar so closely in sweetening power.

The time has come for students of nutrition to emphasize the fact that the place of sugar in the dietary has changed from that of a flavoring adjuvant to a position of not negligible importance as a food fuel. A century ago the per capita consumption of sugar presumably did not exceed ten or twelve pounds yearly. At present the annual use averages a hundred pounds more. This gradual introduction of approximately two pounds, or eight thousand calories a week, into the regimen of the average person can have occurred only through displacement of some equivalent source of energy. Pure sugar, devoid of inorganic salts or vitamins, has thus become a diluent, so to speak, of the national diet. This does not mean that sugar is not a wholesome food; on the contrary, it is easily digested as a rule and quickly mobilized for physiologic uses. Without sugar—in suitable form—in the blood, disaster quickly arises. But the purity of present-day sweet sugar used as a food rather than as a food adjuvant inevitably leads to a decreased intake of the useful "contaminants" that are introduced into the diet along with the cruder sources of carbohydrate or fat that is being displaced. Whether a real menace to well being is involved therein remains to be seen. A change in dietary customs and food habits has, at least, brought new problems.

THYROID PREPARATIONS

Therapy with thyroid preparations has long had a well established place in medicine. The products have specific effects unattainable by the use of any other pharmacologic agents. The effects of thyroid preparations are clearly defined and, in certain instances at least, measurable in character. In view of these facts it is indeed surprising that, as Hunt[1] of the Harvard Medical School has recently pointed out, dosage with thyroid is largely empiric. The labels on the commercial preparations are as a rule not very elucidating. Dosage expressed in terms of grains of fresh glands is, to quote a recent writer, about as rational as reference of the dosage of morphin to the fresh juice of the poppy. Thyroxin, the chemically definite compound isolated by Kendall, presumably represents the essentially active group in the thyroid gland. Since, however, there does not seem to be a constant relation between the amount of thyroxin that can be isolated from a gland and the physiologic activity of the latter, standardization on the basis of obtainable thyroxin does not seem to afford a suitable basis of procedure.

It is a familiar fact that the potent preparations, whether they represent the entire gland, extracts of it, thyroid proteins or purified thyroxin, contain iodin in organic combination. Hence the iodin content has been made the basis for pharmacologic evaluation by some producers, as suggested by Hunt and Seidell for the ninth revision of the United States Pharmacopeia. Dosage on this basis has not, however, found widespread application. According to Hunt, doubts have been expressed as to whether the iodin content of the gland is really a measure of its physiologic activity; the belief that thyroid contains physiologically "inactive iodin" in large but variable amounts has been strengthened in some quarters by the fact that only a fraction of the iodin can be secured in combination as thyroxin. It is doubtless true that there are fetal and perhaps other thyroid glands with some "inactive" iodin, but it is unlikely that such will find their way in any considerable quantity into medicinal preparations.

The ideal standardization of thyroid products could probably be attained through tests of their comparative potency on basal metabolism. The limitations of such an undertaking on a large scale are obvious. Consequently, it is gratifying to know that the latest studies[1] give renewed support to the assertion of a close parallelism between the physiologic activity of thyroid preparations and their iodin content. Little or no inactive iodin has been found in the thyroids of adult animals such as are likely to enter into commercial products. So long as the laboratory worker can actually measure comparative potency with considerable accuracy in relation to iodin content, physicians ought to be eager to grasp this easily determined index as a guide in therapy. There should no longer be justification for prescribing thyroid "tablets" indiscriminately, particularly when it is realized that in fact one "tablet" may contain 2,500 times as much thyroid as another "tablet." According to Hunt, since some thyroid has five times as much iodin as other preparations, and the physiologic activity is at least closely parallel to the iodin content, there is a possibility of one "tablet" having the physiologic activity of 12,500 other "tablets."

Possible adulterations with nonthyroid iodin are readily detectable by an expert, so that such a menace is subject to control through proper inspection, as in the case of other drugs. It is disconcerting to learn that very few of the thyroid preparations on the market comply with the U. S. Pharmacopeia standard. Careful tests[1] show them "to vary greatly in physiologic and therapeutic activity." If all physicians were to base the dosage, when prescribing thyroid gland, on the pharmacopeial product known as "thyroideum siccum" and to assure themselves that the tablets they prescribe contain a definite amount of dried thyroid gland, the present state of confusion would be relieved and thyroid therapy placed on a more rational basis.

1. Hunt, Reid: Standardization of Thyroid Preparations, Arch. Int. Med. 35: 671 (June) 1925.

Current Comment

ANOXEMIA AND ACIDOSIS

Shortage of oxygen is one of the ominous conditions that may at times confront the living organism. According to the evidence of Rous and Drury,[1] the tissues may give indications of impoverished oxygen supply in circumscribed areas, notably in the subcutaneous and cutaneous regions, even while the blood itself has an essentially normal composition. This happens, for example, when through hemorrhage or shock the circulation to an outlying part fails. The symptoms are the development of an acid reaction in the locality involved, an "outlying acidosis" in contrast with the usual alkaline reaction of the cells. Years ago it was noted that lactic acid is eliminated in the urine under conditions in which a deficiency in oxygen might properly be assumed. Objection was presently raised, however, to the conclusion that the excretion of the acid is an index of real acidosis, and that the latter is in turn indicative of oxygen shortage; for it has been observed that lactic acid may occur in the blood and urine under circumstances frankly representative of alkalosis. The current conception of what in truth constitutes an acidosis is somewhat different from that of a few years ago. At that time, increased acid production was synonymous with "acidosis." Conditions in which the kidneys eliminated unusual amounts of beta-hydroxybutyric acid and aceto-acetic acid were frankly termed "acidosis." More recent interpretation of the word has limited it to circumstances in which the hydrogen ion content of the blood has become changed to the acid side; that is, where the p_H is lower than the normal limits of variation, which is ordinarily very small, as a result of the excellence of the neutrality regulations of the body. Investigators have lately written of the "fallacy of asphyxial acidosis," because they have actually observed an alkalosis under conditions of oxygen shortage. The explanation of this lies in the circumstance that, when the oxygen supply is diminished, respiration is promptly accelerated; and, with moderate overbreathing, large amounts of carbon dioxid are eliminated by the lungs, so that the blood may actually show an alkalosis in respect to its reaction. It is now demonstrated, however, that this is merely a temporary, initial phenomenon. According to Koehler, Brunquist and Loevenhart[2] of the University of Wisconsin, anoxemia is fundamentally of an acidotic nature as far as disturbances in the acid-base balance are concerned. Acid production undoubtedly begins within the cells as soon as they suffer from oxygen deficiency. This condition is masked by the development of an alkalosis of the blood due to the "blowing off" of carbon dioxid during the initial period of overventilation. The Wisconsin physiologists have found that the acidosis of anoxemia can be more marked than has been observed in any other condition. The available blood alkali may be depressed to extremely low limits while the carbon dioxid tension, although greatly lowered at first, gradually rises as the acidosis progresses. The nature of the acids arising in the cells in asphyxial acidosis has not been definitely ascertained. Lactic acid, as well as the acids characteristic of diabetic ketosis, has been suspected. Part of the acidity may be due to disturbances in the phosphate systems of the tissues. In any event, the correctness of an acidotic theory for asphyxia now challenges denial.

1. Rous, Peyton; and Drury, D. R.: Outlying Acidosis, J. A. M. A. 85: 33 (July 4) 1925.
2. Koehler, A. E.; Brunquist, E. H., and Loevenhart, A. S.: The Production of Acidosis by Anoxemia, J. Biol. Chem. 64: 313 (June) 1925.

FATIGUE AND SUSCEPTIBILITY TO INFECTION

A review of the various factors that may enter into the conservation of human health and help to determine resistance to disease would reveal a formidable array of proved or assumed phenomena. Environment and heredity can unquestionably be directive influences, but even under conditions in which these are most favorable there may be health hazards that are determined by other personal factors. It has been said that the success of a baneful parasite in invading the body and producing reactions that reach the threshold of clinical symptoms may depend on conditions that either "favor the parasite or disarm the host." Such are the workings of the so-called predisposing causes of disease. They may be described vaguely by such utterly indefinite terms as lowered vitality, decreased resistance, increased susceptibility to infection, or lack of physical stamina. From the standpoint of practical hygiene and preventive medicine, it might be more conducive to progress if the factors were more specifically defined, so that they might be made the subject of direct critical investigation. Some of the harmful influences have been described as exposure to wet and cold, lack of fresh air and sunshine, insufficient or unsuitable food, fatigue and traumatism. One of these, fatigue, has been made the subject of study from the standpoint of its influence on susceptibility to infection.[1] It is generally believed that most disorders of this class, as smallpox, measles, epidemic influenza, infantile paralysis, typhus fever, tetanus and yellow fever, have little or no relation to bodily vigor. On the other hand, there is a widespread assumption that predisposing factors are concerned in the immunity to such infections as tuberculosis and pneumonia. Bailey induced fatigue artificially in varying degrees of severity in experimental animals, and observed their relative susceptibility to intratracheal injections of pneumococci. The results seem to indicate that acute fatigue, in the form of physical exhaustion, and chronic fatigue, in the sense of training, are followed by quite opposite effects in the case of pneumonic infection. The first seems to render the animals more susceptible; the second, less susceptible. It would be premature to dogmatize on such preliminary observations under conditions not always easy of exact evaluation. Nevertheless, it need not be concealed that Bailey's findings, as

1. Bailey, G. H.: The Effect of Fatigue on the Susceptibility of Rabbits to Intratracheal Injections of Type I Pneumococcus, Am. J. Hyg. 5: 175 (March) 1925.

he himself concludes, agree with the general belief that sudden overwork and strain may be detrimental, whereas physical training may increase resistance to certain infections.

SMALLPOX STATISTICS—ONE POSSIBLE INFLUENCE

The harmful influence of such periodicals as Macfadden's *Physical Culture* is obvious. Departing from their peculiar field of exaltation of the physical body, they discourse rabidly on immunity and biology. Their readers are no doubt influenced to oppose or to remain indifferent to vaccination of their children. Indeed, some offer as reasons only that "the leading physical cultural magazines are opposed to it." The results of such propaganda are apparent in our smallpox morbidity. The American Association for Medical Progress, 370 Seventh Avenue, New York, points out that the *Health Bulletin* of the League of Nations credits the United States in 1924 with a greater number of cases of smallpox than any other country. Our total, it is said, was 55,538, as against 46,374 for British India and 24,067 for European Russia. California had 9,425 of these cases; Ohio, 5,334; Michigan, 4,527; Indiana, 3,751; Minnesota, 3,067; North Carolina, 3,659; Georgia and Alabama, more than 2,000 cases each, and Washington, Illinois, Wisconsin, Kansas and Oklahoma more than 1,000 cases each. These fourteen states, with 40 per cent. of the total population, had 79 per cent. of the total number of cases of smallpox. Obviously, mothers must be educated as to the real value of vaccination. Intelligent mothers, unguided, may not read dependable health publications but follow the pseudo-health periodicals that have been mentioned. The family physician can enlighten them on vaccination and can recommend the attractive periodical *Hygeia,* which the American Medical Association established to aid the campaign for sound preventive medicine.

ATLANTIC MEDICAL JOURNAL PUBLISHES JUBILEE NUMBER

The *Atlantic Medical Journal,* representing the Pennsylvania and Delaware state medical societies, issues for September a diamond jubilee meeting number, commemorating the seventy-fifth anniversary of the Pennsylvania society. The souvenir number presents, with five exceptions, portraits of all former presidents; portraits and biographies of the present officers; a brief history of the society by Walter F. Donaldson, secretary, and a description of the medical schools of Pennsylvania. In addition, the number includes the usual scientific matter and prospectus of the meeting to take place in Harrisburg, October 6-9. Special efforts have been made to make the Harrisburg meeting truly representative of the best efforts of modern medical science. The meeting is complete with special conferences of editors, secretaries, women's organizations, public meetings, affiliated organizations and exhibits. The officers of the Pennsylvania State Society and the editors of its journal are to be congratulated on the thoroughness of their work as represented by this exceptional issue.

Association News

MEETING OF JUDICIAL COUNCIL

The Judicial Council of the American Medical Association met in Chicago, September 21. A large amount of business was transacted by the Council, most of it pertaining to questions submitted by individual physicians and by officers of medical societies.

A number of communications submitted to the Council dealt with the establishment of hospital associations, organized for the purpose of securing hospital and medical service at rates considerably below the fees ordinarily in effect. Other communications dealt with the questions of ethics involved in the solicitation of patients through the medium of so-called hospital associations. The Judicial Council held that the Principles of Medical Ethics are reasonably specific with respect to this matter in that Section 4, Chapter II, provides that "solicitation of patients by physicians as individuals, or collectively in groups by whatsoever name these may be called, or by institutions or organizations" is unprofessional.

To meet specific demands that the terms "contract practice" and "sciences allied to medicine" be defined, the Council adopted the following definitions:

CONTRACT PRACTICE

By the term "contract practice," as applied to medicine, is meant the carrying out of an agreement between a physician or group of physicians, as principals or agents, and a corporation, organization or individual, to furnish partial or full medical services to a group or class of individuals for a definite sum or for a fixed rate per capita.

SCIENCES ALLIED TO MEDICINE

By the term "allied sciences," as applied to medicine, is meant those subdivisions of general science that are held by teaching institutions of standing and reputation conferring the degree of Doctor of Medicine to have a place in the professional education and training of a physician.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Joint Meeting.—The Calhoun, Etowah and Talladega County medical societies held a joint meeting at Crystal Springs Lodge, September 8, at the invitation of the Calhoun County Medical Society. There was a business and a scientific session, at which, among others, Dr. James M. Washam, Talladega, discussed "Cardiac Arrythmias"; Dr. Elmus K. Hanby, Attalla, "Scleroderma," and Dr. Irwin P. Levi, Anniston, gave a lantern slide demonstration of fractures.

ARKANSAS

Society News.—The Pulaski County Medical Society will hold a joint meeting with the Faulkner County Medical Society at Conway, October 19.

Personal.—Dr. Charles R. Shinault, Little Rock, has been appointed ship surgeon for the United Fruit Company and will sail between New Orleans and Honduras.

CALIFORNIA

Personal.—Floyd DeEds, Ph.D., has been appointed professor of pharmacology at the Stanford University Medical School, San Francisco.——Dr. James A. Fairchild of Salem, Ore., has been appointed physician to Pomona College at Claremont.

Spotted Fever Near Lake Tahoe.—A fatal case of Rocky Mountain spotted fever is reported in *California and Western*

Medicine as having occurred about 35 miles east of Lake Tahoe. The patient was bitten by ticks near Como. This is the first case as far as known in that part of the state (THE JOURNAL, April 21, 1923, p. 1146).

Medical Reserve Bulletin.—Evacuation Hospital No. 90 U. S. A. Reserve, with headquarters at 722 Electric Building, San Diego, has published a bulletin which contains the names of the persons attached to the hospital, a directory of various other organizations, editorials and articles and a diagram of medical service in the theater of operations.

Dr. Dysart Arraigned.—Charged with using the mails to defraud, Dr. John C. Dysart, said to be the owner of a sanatorium in El Paso, Texas, was arraigned, August 13, before U. S. Commissioner Hayden, San Francisco, and bail was fixed at $7,500, it is reported. Dysart was previously indicted following an investigation of a scheme to colonize a large tract of land in Mexico. He is alleged to have sent through the mail advertisements misrepresenting the property.

COLORADO

Hospital News.—Construction work has started on the $2,000,000 tuberculosis sanatorium of the Methodist Church at Colorado Springs.

DISTRICT OF COLUMBIA

Report of Sanitary Survey of Potomac River.—During July, the health department of the District of Columbia and the U. S. Public Health Service conjointly conducted a sanitary survey of the Potomac River in the vicinity of Washington to determine to what extent the water was polluted by the discharge of sewage and other waste materials from Washington and other nearby communities in Maryland and Virginia. The examination of specimens of water obtained from hundreds of places on both sides of the river showed that at all points from far above Washington to the mouth of the Anacosta River the Potomac is "hopelessly" polluted and does not approach the sanitary condition necessary for the protection of public health. The publication of this report, it is said, will prevent further utilization of the river for public bathing purposes in the District of Columbia and necessitate the adoption of a new program for the disposal of raw sewage from the city of Washington. If the present insanitary condition of the river is not overcome, the public health of the community will be endangered and many public works —including some well known memorials—in the park along the river will lose their attraction.

GEORGIA

Personal.—Dr. Henry M. Fullilove, Athens, has been elected president of the Association of Prison Physicians of Georgia. ——Dr. James W. Payne, Americus, county health officer, has resigned and gone to Florida.——The Muscogee County Medical Society, Columbus, has appointed a committee to cooperate with the city manager in selecting a health officer to succeed Dr. James A. Thrash, Jr., who has resigned to engage in private practice, effective as soon as his successor is appointed.

ILLINOIS

Fine and Imprisonment.—It is reported that Dr. Louis H. Hayes, Alton, pleaded guilty, September 9, to violation of the Harrison Narcotic Law and was sentenced by Judge Fitzhenry at Quincy to five years in the penitentiary and to pay a fine of $2,000.

Personal.—Dr. Duke R. Gaskins, Harrisburg, has been appointed chief surgeon and manager of the Union Hospital, West Frankfort.——Dr. Charles Harold Sihler has been appointed county physician for North and South Litchfield; Dr. Charles H. Lockhart, county physician for Witt; Dr. William O. Fish for the village of Fillmore; Dr. Edmund T. Douglas, Hillsboro, for Hillsboro Township, Schram City and the county farm; Dr. Jesse M. Hoyt, Nokomis, for Winona, Coalton and Nokomis, and Dr. Robert N. Canaday for Rountree and Irving townships.——Dr. Paul E. Greenleaf has been appointed district surgeon for the Illinois Central Railroad at Bloomington, to succeed the late Dr. Franklin C. Vandervort.

Chicago

Milk Commission Trip.—The Chicago Medical Milk Commission will entertain physicians on a trip to the Rock River Model Farm of Mrs. Medill McCormick on the Rock River near Rockford, Ill., September 30, leaving the Union Station at 11:30 a. m.

Annual Dinner of Medical Society.—The annual dinner of the Chicago Medical Society will be at the LaSalle Hotel, 6:30 p. m., October 14, when the new officers will be installed. Dr. William Allen Pusey, former president of the American Medical Association, will act as toastmaster. The dinner will be informal ($3 per plate). Dr. Emmet Keating is chairman of the committee on arrangements.

Odontographic Society Debate.—The Odontographic Society of Chicago announces a debate, October 12, in which Weston A. Price, D.D.S., Cleveland, will present the affirmative, and John P. Buckley, D.D.S., Los Angeles, the negative side of the subject: "Resolved, That Practically All Infected Pulpless Teeth Should Be Removed." The debate will be in the Grand Ball Room, LaSalle Hotel, at 8 o'clock; there will be a dinner at 6 o'clock, to which members of the medical and dental professions are invited. Two dollars per plate.

Typhoid Carriers in Chicago.—According to the commissioner of health, there were thirty-seven typhoid carriers on record in Chicago in the quarter ending June 30, this year, an increase of two over the corresponding period of last year. Since 1916 all persons who have recovered from typhoid fever in Chicago have been examined in order to detect carriers, and in this way forty-five carriers have been discovered. It is estimated that there are now 120,000 persons in the city who had typhoid fever previous to 1915 and that among them there are more than 1,000 unrecognized typhoid carriers. The health department desires to learn the names of typhoid carriers and will show those who cooperate every consideration. In the quarter ending June 30 there were forty-six cases of typhoid fever reported to the department of health as compared with thirty-six for the corresponding quarter last year. Three of these cases were due to contact with typhoid carriers.

INDIANA

Society News.—The twenty-fifth annual meeting of the Ohio Valley Medical Association will be in Indianapolis, November 10-11, at the Claypool Hotel. Among the speakers will be Drs. Joseph L. Miller, Chicago, John B. Deaver, Philadelphia, Daniel Eisendrath, Chicago, Martin H. Fischer, Cincinnati, and Curran Pope, Louisville, Ky.

More Typhoid Suits at Fort Wayne.—The city of Fort Wayne and the Pennsylvania Railroad Company have been made defendants in two more suits filed in superior court, in which damages are sought for deaths in the typhoid epidemic in 1923. It is charged that the railroad's water system was connected with the city water supply, and that certain persons died as a result of an epidemic which followed.

Enrolment at State Medical School.—The Indiana University School of Medicine, Indianapolis, opened, September 16, with an enrolment of about 275 students, an increase of 15 per cent. over the registration of last year and the largest registration, it is reported, in the history of the school. Members of the faculty held a reception for the medical students, September 18, in the medical school building which was in the nature of a "get-acquainted" meeting. Dr. Thurman B. Rice, who for the last year has been connected with the division of laboratories of the state department of health, returned to the medical school faculty this fall as assistant professor in the department of bacteriology and public health.

Health Food Show.—Under the auspices of the National Dairy Exposition, October 10-17, at Indianapolis, there will be a "health food show" under the personal direction of Elmer V. McCollum, D.Sc., professor at the School of Hygiene and Public Health, Johns Hopkins University, Baltimore, which is said to be the first of its kind in this country. Foods that have been found essential will be displayed and many other foods classified by Dr. McCollum, their food values charted and details of their preparation demonstrated by nutrition workers. The purpose of the health food show is to educate the public to the quality of the more important agricultural foods and to emphasize the supplementary relation of some foods to others.

IOWA

Personal.—Dr. William Jepson, Sioux City, was elected president of the Association of Professional Men's Clubs at the annual convention in Milwaukee, September 11-12.

Hospital News.—The Eleanor Moore County Hospital, Boone, which was recently damaged by fire, will remodel the building and heating plant at a cost of about $35,000.

Society News.—The Lee County and Van Buren County Medical Societies recently held a joint meeting on the Des Moines River at Anderson Park. About 100 physicians attended.——The Davis County Medical Society held its annual picnic meeting recently at the Bloomfield Country Club, Bloomfield.——Dr. Henry Hanson of the International Health Board of the Rockefeller Foundation, New York, addressed the Woodbury County Medical Society, September 9, on "Insect-Borne Diseases of South America."

KENTUCKY

Change of Place of Meeting.—It was announced, September 12, that the annual meeting of the Kentucky State Medical Association will be held at the Brown Hotel, Louisville, October 5-8, instead of Owensboro as originally planned. The change was made due to the uncertainty of hotel accommodations pending the opening of the new Owensboro Hotel.

Typhoid Fever Warning.—The state board of health has issued a statement concerning the health situation brought about by the "unprecedented" drought, in which many water supplies in the state have been exhausted. It is said that reports indicate in the last few weeks an "alarming" increase in typhoid fever in Kentucky and that when rains replenish water supplies, there will probably be an unusual amount of typhoid fever organisms in untreated water. The board recommends boiling all drinking water except that from known safe sources and urges immunization by means of typhoid vaccine.

New Faculty Members.—The annual fall smoker of the University of Louisville School of Medicine, Louisville, was held, September 11, in honor of the eleven new members of the faculty. They are: Richard W. Jackson, Ph.D., assistant professor of physiologic chemistry; Ralph J. Kaufman, Ph.D., assistant professor of physiologic chemistry; M. W. Caskey, Ph.D., director in physiology and pharmacology; Dr. Charles J. Armstrong, instructor in surgery and surgical pathology; Dr. Thomas Cook Smith, instructor in pediatrics and resident in pediatrics, Louisville City Hospital; Dr. Elmer L. Straub, Jr., instructor in pathology and bacteriology and resident pathologist, Louisville City Hospital; Dr. James M. Kinsman, instructor in medicine; Dr. Roy F. Feemster, instructor in pathology and bacteriology; Dr. Gordon S. Buttorff, assistant in medicine and assistant in clinical pathology; Dr. Roy Glenwood Spurling, assistant in surgery and resident in surgery, Louisville City Hospital, and Dr. Robert L. Kelly, assistant in dermatology and syphilology. The dean, Dr. Stuart Graves, said, among other things, that the large number of students applying for admission this fall enabled the committee to choose those who offer much more than the minimum required preparation of two years in college. Preference was given to residents of the city of Louisville and to residents of the state. While 47 per cent. of the members of the freshman class this fall are natives of Kentucky, there are students from sixteen states and Hawaii. The organization of the City Hospital staff has been rearranged on a twelve months' basis with the service arranged in units of two months, thus eliminating the confusion which attended complete shifts in the service twice a year.

MARYLAND

Appointment to Psychiatric Clinic.—Dr. Otto Wuth, associate of Dr. Emil Kraepelin of Munich, Germany, has accepted a position on the staff of the Henry Phipps Psychiatric Clinic, Johns Hopkins Hospital, Baltimore. Dr. Wuth will be in charge of the laboratory of internal medicine at the clinic; much of his work will be research.

New Child Clinic.—Plans to establish a weekly clinic at Johns Hopkins Hospital, Baltimore, for children with heart disease, have been completed, according to an announcement by Dr. Winford H. Smith, director of the hospital. The clinic will supplement the cardiac examinations being made in connection with the children's free dispensary and will be the fourth special clinic at the hospital related to the children's dispensary. The other three clinics are the nutritional clinic, the tuberculin clinic and one for the treatment of social diseases.

Personal.—Dr. Dean D. Lewis, newly appointed professor of surgery at Johns Hopkins University Medical School and surgeon-in-chief of the Johns Hopkins Hospital, Baltimore, has arrived to assume his duties.—— Sir George Lenthal Cheatle, London, England, was a recent visitor in Baltimore and the guest of Dr. Joseph C. Bloodgood, who gave a dinner in his honor September 16 at the Maryland Club.—— Dr. Robert H. Riley, chief of the Bureau of Communicable Diseases, State Department of Health of Maryland, addressed a meeting of the West Virginia Tuberculosis Association, Cumberland, September 17.

MASSACHUSETTS

Hospital News.—The Quincy City Hospital, Quincy, has let a contract for the erection of a $150,000 maternity department.

Joint Meeting.—The Essex North and South, the Middlesex North and the Middlesex East District Medical societies held a joint meeting at the Danvers State Hospital, September 2 (THE JOURNAL, September 5, page 752). Dinner was served by the hospital authorities, through whose courtesy and that of the state commissioner of mental diseases the meeting place was arranged.

Public Medical Lectures.—The Harvard University Medical School will give a course of six lectures open to the public on "The Care of the Patient." The lecturers will be Dr. David L. Edsall, October 6; Dr. Franklin G. Balch, October 8; Dr. Alfred Worcester, October 13; Dr. Francis W. Peabody, October 15; Dr. Edward W. Taylor, October 20, and Dr. Charles MacFie Campbell, October 22. The lectures will be at the medical school, Longwood.

MICHIGAN

Personal.—Dr. Leonard F. Thalmer, city physician of Jackson, has resigned, effective November 1.——Dr. Colonel B. Burr, Flint, for several years head of the Oak Grove Hospital, was elected an honorary member of the Michigan State Medical Society at its recent meeting in Muskegon.——Dr. Blanche M. Haines, formerly director of the Bureau of child hygiene and public health nursing of Michigan, has been appointed head of the Division of Maternal and Infant Hygiene of the U. S. Children's Bureau, Washington, D. C.

State Medical Election.—At the annual meeting of the Michigan State Medical Society, Muskegon, September 8-10, Dr. Cyrenius D. Darling, Ann Arbor, was elected president; Drs. Robert I. Busard, Muskegon, Harry H. M. Malejan, Detroit, Albert L. Callery, Port Huron, and Edwin J. Evans, Ontonagon, vice presidents; Dr. Joseph E. King, Detroit, was reelected speaker of the house of delegates, and Dr. Carl F. Moll, Flint, was named delegate to the American Medical Association convention, with Drs. Louis J. Hirschman of Detroit and Willis E. Chapman of Cheboygan as first and second alternates, respectively. The 1926 meeting will be in Battle Creek.

MISSOURI

Personal.—Dr. Elizabeth L. Broyles, St. Joseph, has been appointed resident physician of Wellesley College, Wellesley, Mass.——Dr. John L. Lavan has been appointed city epidemiologist for Kansas City by the hospital and health board.

Gift to Medical School.—Provision is made in the will of the late Mrs. Nellie S. Boylan, Kansas City, for a surgical research laboratory in connection with the school of medicine at the University of Missouri by an endowment fund of about $100,000. The will stipulates that Dr. Clifford C. Nesselrode shall be the trustee in charge of the fund and that he shall appoint two other trustees. All of them will serve without pay.

Governor Requests State Board Resignations.—Governor Baker formally requested by letter, September 16, the resignation of each member of the state board of health. The members of the board are Drs. Emmett P. North, St. Louis; James Stewart, St. Louis; Cortez F. Enloe, Jefferson City; James R. McVay, Kansas City; Herman S. Gove, Linn; Homer L. Kerr, Crane, and T. Hurley, Wilcoxen, Bowling Green. The governor said that he would take steps for the reorganization of the board within twenty-four hours after letters are received. According to the St. Louis *Star*, three resignations were in the hands of the governor, September 17, another member is certain to resign, a fifth probably will resign, and the resignation of a sixth, a de facto member, is unnecessary. Dr. North is reported to have resigned in compliance with the governor's request, September 18.

NEW JERSEY

Hospital News.—Mercer Hospital, Trenton, has awarded a contract for a $160,000 maternity hospital.——Paul Guenther has offered $10,000 toward the erection of the proposed community hospital at Dover.

NEW YORK

Personal.—Dr. James D. McKinnon and Dr. Edgar R. Maillard have been appointed assistant pathologists in the laboratory of the state department of health.——Dr. Alexander C. Gaal, assistant of the Hygienic Institute, University of Budapest, and Dr. Aitken Seager, lecturer in tropical hygiene and sanitation, Imperial College of Tropical Agriculture in Trinidad, B. W. I., recently visited the state department of health at Albany.

Medical Outing at Lake Keuka.—About 250 physicians from counties of central New York assemble informally each year, elect officers and pay a nominal fee toward the outing of the Lake Keuka Medical and Surgical Association. The twenty-sixth annual meeting was recently held in the Keuka Hotel, Keuka, Steuben County. The families come, too, for the outing which occurs on the Thursday and Friday nearest the full moon in July. Among the speakers at the last assembly were Dr. Charles Gordon Heyd, "Differential Diagnosis of the Right Upper Abdomen"; Dr. Samuel C. Smith, Philadelphia, "Cardiac Irregularities"; Dr. Douglas P. Arnold, Buffalo, "Diarrhea in Children"; Dr. Ethan F. Butler, Sayre, "Lung Abscess," and Dr. William E. Caldwell, New York.

New York City

Harvey Society Lecture.—The first of the series of Harvey Society lectures, given under the patronage of the New York Academy of Medicine, will be at the academy, October 3, at 8:30 by Dr. F. R. Nager, professor of otology, University of Zurich, Switzerland, on "New Problems in Otology."

More Vaccination Stations.—In the vaccination campaign being conducted by the health department in the Bellevue-Yorkville district four emergency stations have been opened at 306 Avenue A, 348 East Thirty-Second Street, 241 East Fortieth Street and 322 East Fifty-Ninth Street. Vaccination will be performed free of charge by health department physicians except on Sundays and holidays.

Society News.—At the meeting of the New York Academy of Medicine, 17 West Forty-Third Street, October 1, 8 p. m., the program will be presented by the Albany Medical College following the executive session. Dr. Arthur W. Elting will speak on "Study of Fatal Fat Embolism"; Dr. Victor C. Jacobson, "Clinical Aspects of Ectopic Endometriosis"; Dr. George S. Amsden, "The Personality in Dementia Praecox"; Drs. Arthur Knudson and Melvin Dresbach, "Observations on the Standardization and Action of Drugs of the Digitalis Series"; Drs. Lemuel W. Gorham and Thomas Ordway, "The Relation of the Level of Sugar in the Blood to That of So-Called Occult Sugar in the Urine."

Funds for Medical Library.—The New York Academy of Medicine solicits donations and bequests for maintenance and expansion of its library. A donation of less than $5,000 and more than $1,000 will provide a named library fund, the income of which will be used for general library purposes or for the purchase of books and periodicals as the donor may desire. A donation of more than $5,000 will provide for a special library fund, the income of which may be used for general purposes or restricted to the purchase of books and periodicals as the donor desires; when restricted, a special book plate will be used. Donations of less than $1,000 will be added to the general library funds.

Hospital News.—The rebuilding of the east wing of the Methodist Episcopal Hospital, Sixth Street and Seventh Avenue, Brooklyn, at a cost of more than $100,000, was completed, September 19. The wing will accommodate fifty-five patients.——Construction will start soon on what is said to be the world's largest nurses' home and training school at Mount Sinai Hospital, New York. The structure, costing $2,000,000, will be fourteen stories high and connected with the seventeen buildings of the Mount Sinai group by tunnel. The upper floors will have accommodations for 480 nurses. ——The roentgen-ray department of the New York Skin and Cancer Hospital has been remodeled at a cost of about $16,000.

NORTH CAROLINA

Proposed Tuberculosis Hospital.—The commissioners of Hertford County have taken steps toward establishing a Quadri-County Tuberculosis Hospital in the Roanoke-Chowan district, composing the counties of Hertford, Bertie, Northampton and Gates.

Personal.—Dr. David R. Perry who has been associated with the North Carolina Tuberculosis Association in conducting state-wide clinics has resigned to engage in practice in Durham.——Dr. Joseph E. Burns, Goldston, has been appointed house surgeon of Willard Parker Hospital, New York.

Hospital News.—A recent audit given out by the governor's office at Raleigh shows the per capita cost of the four state institutions for the care of mental defectives as follows: State Hospital for Insane, Raleigh, $341.18; State Hospital for Insane, Morganton, $279.58; State Hospital for Insane, Goldsboro (colored), $178.33, and State School for Feeble-Minded, Kinston, $407.93.

Revocations and Exonerations.—At a special session in Greensboro, September 15, the state board of medical examiners gave a hearing to certain physicians who, it is reported, had been recently convicted in federal court for violation of the Harrison Narcotic Law. The board revoked the license to practice of Drs. Ira J. Stoner, West Durham, and James F. Brewer, Asheville, and exonerated by unanimous vote Drs. Ptolmey P. Chambers, Asheville, and Thomas W. Sumner, Fletcher. Dr. Garrett D. Gardner, Asheville, Dr. George W. Purefoy, Asheville, Dr. Needham P. Boddie, Durham, and Dr. William A. Strowd, Durham, were exonerated by a majority vote.

OHIO

Personal.—Dr. Charles W. Conley, Columbus, for seven years a member of the medical staff of the department of industrial relations, has resigned, effective October 1, and will be succeeded by Dr. Austin H. Seeds, Columbus.——Dr. William F. Bay has resigned from the medical staff of the workmen's compensation fund and will be succeeded by Dr. David P. Young of the National Military Home at Marion, Ind.

Sewage Plans Rejected.—The plans for the proposed sewage treatment plant at Ashland have been disapproved by the state department of health following a study by engineers, which indicated that the process to be used would not change the sewage so that the effluent could be discharged into the Mohican River. The process to be employed in treating the sewage involved the use of marl as a precipitant, together with lime and iron.

Proposed Health Program.—According to a special writer in the Cleveland *Press*, the commissioner of health of Cleveland proposes to open his 1926 program with a campaign to rid the city of quacks. The commissioner claims, it is said, that there are more than 150 "pseudo-physicians" in Cleveland, most of whom have licenses for limited practice but who actually are engaged in general practice. The commissioner proposes to establish ten new infant clinics next year (there are now sixteen infant welfare stations), also free dental clinics throughout the city, and foster ordinances that will control pollution of the air by smoke and noxious fumes, and of the water by industrial and other dangerous waste material.

Low Diphtheria Record.—A new low record of deaths from diphtheria in Cincinnati was established last year, there being nineteen, a rate of 4.6 per hundred thousand population. According to the health department, there was an increase in the number of deaths from diphtheria in Cincinnati from 171 in 1881 to 491 in 1890, the year that antitoxin was discovered; at no time since 1915 has the number of deaths been higher than seventy-one. The health department is carrying on a campaign of immunization by means of toxin antitoxin; quarantine regulations are enforced, the state department of health investigates deaths from diphtheria to determine the contributory cause, and there is a diphtheria pavilion at the Cincinnati General Hospital for those who have not facilities at home for isolating patients. Fourteen of the nineteen deaths from diphtheria last year in Cincinnati were in children 5 years of age or younger.

Typhoid Fever Widespread.—There are two widely separated typhoid fever epidemics in Ohio, in Athens County in the southeastern part of the state, and in Wood County in the northwest. There are also, says the state department of health, an unusual number of districts which reported from several up to fourteen cases in August while the state as a whole shows an increase of 35 per cent. over the number of cases reported a year ago. Water supplies are said to be at the lowest level in three years, and their pollution at the highest point ever known. An investigation in Wood County revealed nothing in common in the cases except that the patients had all been in Sandusky County before becoming ill. The outbreak in Athens County is under investigation.

The month of September opened, it is said, with a potential epidemic in Sandusky numbering twenty-four known cases, with twenty-one of them on the same milk route. There are sixteen cases under one physician's care in Oak Hill.

OKLAHOMA

Another County Health Unit.—The commissioners of Kay County recently voted to maintain a county health unit. Dr. Merl C. Clift, Blackwell, has been appointed county physician and will have charge of the sick at the county farm and jail.

Society News.—The Southwest Branch of the American Urological Association will meet in Oklahoma City, November 8-9. Dr. William J. Wallace, Oklahoma City, was elected president of the branch at the meeting in Denver.——Dr. Frank L. Watson, McAlester, has been elected president of the Southeastern Oklahoma Medical Association, and Dr. John A. Haynie, Durant, secretary-treasurer.

OREGON

Personal.—Prof. Wilhelm Neumann, Vienna, Austria, spent several days in Portland recently as a guest of Dr. Ray W. Matson.

State Medical Election.—At the annual meeting of the Oregon State Medical Society, Medford, September 2-4, Dr. Willis B. Morse, Salem, was elected president-elect; Drs. William W. P. Holt, Medford, Warren C. Hunt, Klamath Falls, and James H. Robnett, Albany, vice presidents; Dr. Frederick D. Stricker, Portland, secretary, and Dr. John Earl Else, Portland, treasurer.

Hospital News.—The Sisters of Charity of the House of Providence have purchased ground in Astoria for a new hospital which will cost $400,000 and will contain 125 rooms.——A three-story hospital will be constructed at Cottage Grove, with the second floor for offices for physicians, the first for business houses, and the third for hospital purchases with a capacity of from twenty-five to forty beds.

PENNSYLVANIA

New Law Requires Annual Registration.—A law becomes effective, January 1, 1925, which provides that all persons engaged in the practice of medicine, or any allied branch of the healing art, in the state of Pennsylvania, must register with the Board of Medical Education and Licensure in the Department of Public Instruction as practitioners annually on or before the first day of January of each succeeding year. The penalty for persons who practice without having registered as provided, on conviction before a magistrate, alderman, or justice of the peace in the county in which the offense is committed, is a fine of not less than $10 and in default ten days imprisonment.

Side Lights on the State Meeting.—The hosts to the state medical society which meets at Harrisburg will be the counties of Cumberland, Dauphin, Lancaster, Lebanon and York. There will be a Jefferson dinner Wednesday evening, October 7, at the University Club, Harrisburg, and Tuesday evening a dinner for visiting women physicians at the Penn-Harris Hotel. The Roentgen Ray Society of Central Pennsylvania will meet in the ballroom of the Penn-Harris Hotel, Friday, October 9. The state health department will display an exhibit at its quarters in the South Office Building. The public meeting will be in the Y. M. C. A. Building, Second and Locust streets, the principal speaker being Dr. Alexander Lambert, New York, former president of the American Medical Association. The twentieth annual conference of secretaries will be at the Harrisburg Club, Front and Market streets, Tuesday, 5:15 o'clock. There will be a conference and luncheon of editors Tuesday, 1 o'clock, at the University Club. The scientific exhibit will be in Parlors B and C at the Penn-Harris Hotel. The Harrisburg headquarters of the state medical society are at 230 State Street.

Philadelphia

Hospital Sold.—The buildings of the Medico-Chirurgical Hospital have been sold by the trustees of the University of Pennsylvania.

Personal.—Dr. Hubley R. Owen, chief police surgeon, was guest of honor at a dinner arranged by all of the police surgeons in the city on his recent return from Europe.——Dr. Gabriel J. Kraus recently received the Order of Haller Swordsmen from the Polish government in recognition of services to that country during the World War.

RHODE ISLAND

Smallpox Outbreak.—For the first time in twenty-five years smallpox has appeared in Woonsocket, eight cases having been reported, September 6. The state board of health is cooperating with the local health officer.

Clinical Conferences of State Society.—A committee appointed, in accordance with the vote of the state medical society at its last meeting, to organize clinical conferences at various hospitals throughout the state, met, August 18, at Providence, and elected Dr. Halsey DeWolf, chairman, Dr. James W. Leech, secretary, and Dr. Jesse E. Mowry, treasurer. Letters were sent to the boards of trustees of various hospitals requesting cooperation in furthering the plan, and to the secretary of the staff of these hospitals. It was decided to confine the conferences at present to hospitals whose staffs are affiliated with the Rhode Island Medical Society and that schedules of the conferences be sent to all physicians in the state. The committee voted to establish a registration fee of $5 for one course and of $10 for three courses.

SOUTH CAROLINA

Medical College Association Meeting.—The Association of American Medical Colleges will meet in Charleston, October 26-28. All of the sessions will be held at the Fort Sumter Hotel.

SOUTH DAKOTA

Aberdeen's Milk Supply.—As a result of a survey of the milk supply by the state board of health, the city of Aberdeen passed an ordinance about a year ago placing its milk supply under the supervision of the full-time health organization. In the first year, under the ordinance, every herd supplying milk to Aberdeen was tested for tuberculosis and fifty-two animals were removed. Twenty-three dairy farms were inspected a number of times; they have met the requirements of the ordinance. All milk now sold in Aberdeen is in sealed bottles with the date of production and name of the dairy on the cap, and milk served in hotels and restaurants is in individual small bottles. The problem of milk sanitation here has been largely educational. Most of the milk was brought to the city not by dairy farmers but by "wheat farmers" living a few miles of the city, who formerly handled milk under very insanitary conditions. The inspector visited these farms repeatedly, instructing the farmers in sanitation; today the seventy-three sources of supply have, with few exceptions, met the requirements. All pasteurization plants now use an automatic thermometer, which insures the proper temperature. The work is not completed; about 15,060 gallons of milk each month are sold as raw milk and 31,350 gallons are pasteurized.

TENNESSEE

Typhoid at Chattanooga.—The outbreak of typhoid fever at Chattagooga amounted to thirty-five cases, September 10, it is reported, fifteen of which were in the thirteenth ward.

Society News.—The Walnut Log Medical Society will hold its fourth annual meeting at the Walnut Log Hotel, Reelfoot Lake, September 29-30. There will be a barbecue Tuesday at noon and a musical program and dance in the evening. Among others, Dr. William C. Colbert, Memphis, will speak on "Bacillus Pyocyaneus Septicemia: A Report of Two Cases"; Dr. Oval N. Bryan, Nashville, "Sodium Thiosulphate in Metallic Poison"; Dr. Virgil E. Simpson, Louisville, Ky., "Dysthyroidism," and Dr. Fred W. Rankin, Lexington.

TEXAS

Annual Clinic.—The Dallas County Medical Society held its annual clinic at the Baylor Hospital, Dallas, September 8, under the presidency of Dr. William D. Jones. Among many others on the program was Dr. Charles M. Rosser, Dallas.

Meeting of State Society's Committees.—Following an all day session of various committees of the Texas State Medical Association, at Fort Worth, August 25, the Tarrant County Medical Society gave a banquet inviting, among others, members of the Dallas County Medical Society. Dr. Charles M. Rosser, president of the state medical association, presided. The principal speaker was Attorney General Moody, and his subject, "The Medical Practice Act Should Be Enforced."

UTAH

Hospital News.—Dr. Lester D. Mahannah has purchased the Smith Hospital at Brigham and named it the Mahannah Hospital.

VIRGINIA

Freshman Class Filled.—The number of applicants for admission to the Medical College of Virginia, Richmond, this fall exceeded the quota of eighty by about 200. The freshman class represent students trained in twenty-eight colleges in the country.

Personal.—Dr. Arthur D. Knott, county health officer of Accomac County, has resigned to accept a similar position at West Palm Beach, Florida.——Dr. Isaac C. Harrison has resigned as a member of the school board of Danville.——Dr. Percy E. Schools has been appointed head of the Municipal Tuberculosis Hospital of Richmond and will take up his duties, October 1.——Dr. James H. Ferguson, Clifton, has been elected president of the Fairfax County Medical Society.

State Medical Meeting.—The Medical Society of Virginia will meet, October 13-16, at the Jefferson Hotel, Richmond. The guest speakers will be Drs. George E. de Schweinitz, Philadelphia, former president of the American Medical Association; Alfred Stengel, Philadelphia, and David S. Hillis, Chicago. A new feature will be motion pictures on professional subjects. There will be a symposium on "Puerperal Infection" and a scientific exhibit. Dr. Thomas D. Jones, Medical Arts Building, Richmond, is general chairman in charge of the meeting. The usual annual golf tournament will be on Tuesday, October 13. Those wishing to play should write Dr. Emmett H. Terrell, Medical Arts Building, Richmond. The first session of the meeting will be Tuesday.

Society News.—At the meeting of the Augusta County Medical Society, Staunton, August 6, the councilor from the tenth district, Dr. Percy C. Graybill, Fincastle, spoke, and the retiring president, Dr. David G. Gochenour, Stuarts Draft, tendered a banquet to the members and guests. Dr. Joseph L. Alexander, Staunton, was elected president for the coming year, and Dr. John E. Womack, Staunton, secretary. This society held a special meeting, August 20, to consider steps for the betterment of dispensary service to the indigent poor of the city and county, and appointed a committee, comprising Drs. Kenneth Bradford, Achilles L. Tynes and Alexander F. Robertson, Jr., to investigate and render a report.——The Medical Association of the Valley of Virginia held its semiannual meeting, September 24, at Winchester.

WASHINGTON

Health Officers' Meeting.—The county health officers of Washington held their annual meeting at Seattle, September 15-16. The guests were Dr. Frederick D. Stricker, secretary, Oregon State Medical Society, and Dr. Henry E. Young, Victoria, B. C., provincial health officer of British Columbia.

Personal.—Dr. Curtis W. Welch, Nome, Alaska, arrived in Seattle, September 16, en route to his home in New Haven, Conn. Dr. Welch, the only physician in Nome, was in charge of the epidemic of diphtheria in that city last winter. Arrangements have been made for a physician from Seattle to go to Nome during Dr. Welch's absence.

WEST VIRGINIA

Society News.—Dr. Joseph C. Bloodgood, Baltimore, will address the Ohio Valley Medical Society of Wheeling, October 9, on cancer and will conduct cancer clinics at the Ohio Valley General and the Wheeling hospitals.

Appointments to Health Council.—Dr. Hugh A. Barbee, Point Pleasant, and Dr. Benjamin O. Robinson, Parkersburg, have been appointed by the governor as new members of the state health council, and Dr. Harry G. Camper, Welch, reappointed. Dr. Barbee succeeds Dr. Vincent T. Churchman and Dr. Robinson succeeds Dr. Thomas L. Harris, Parkersburg. These appointments are for terms of four years. Members of the health council serve without pay.

WISCONSIN

State Medical Election.—At the annual meeting of the State Medical Society of Wisconsin, Milwaukee, September 16-18, Dr. Joseph F. Smith, Wausau, was elected president, and Drs. Carl Henry Davis, Milwaukee, William E. Fairfield, Green Bay, and William D. Stovall, Madison, vice presidents. The secretary and treasurer will be selected by the Council in January. The next annual meeting will be held in Madison in 1926.

PHILIPPINE ISLANDS

Appointments to Health Department.—Dr. Jacobo Fajardo, director of the Philippine Health Department, recently appointed Dr. Antonio Ejercito surgeon in the Philippine Health Service with station at Meisic, and Dr. Jose R. Sison as acting district health officer of the Province of Agusan.

Illegal Practitioner Fined.—Judge Pedro Concepion, Manila, recently fined Paul Verzosa, "dean of the College of Philosophy of the Liceo de Manila," 200 pesos for practicing medicine without a license. The evidence showed that Verzosa had advertised in a newspaper, prefixing the title "Dr." to his name. Verzosa said in court, it is reported, that he used the title for advertising purposes in view of the fact that he was a "doctor in applied mental science."

Board of Regents' Meeting.—At a recent meeting of the board of regents of the University of the Philippines, it was proposed to appoint Dr. Andres Bautista head and professor of the department of medicine; Dr. Antonio G. Sison, professor, Dr. Perpetuo D. Gutierrez, associate professor, and Dr. Pedro T. Lantin, among others, assistant professor. The total budget for the department of medicine amounts to 17,840 pesos. The board awarded Rockefeller Foundation Fellowships to Narciso Cordero (physiology), Dr. Jose I. Abuel (brain surgery) and Dr. Fide Cuajunco (microscopic anatomy).

Society News.—At a recent meeting of the Manila Medical Society in the library of the Philippine General Hospital, Francisco G. Kee and Jose Santillan read a joint paper on "Horse Serum Treatment of Carbunculosis and Similar Affections."——The Bicol Health Officers Assembly met at Albay, August 17-19, to discuss among other things the yaws campaign and leprosy, malaria and hookworm control and to systematize the work in sanitation. On the last day of the convention a special effort was made to secure the attendance of all the insular, provincial and local officials in that section of the islands.

GENERAL

Change of Date of Meeting.—The Central Neuropsychiatric Association has changed the date of its meeting at Ann Arbor, Mich., from October 16-17 to October 23-24. Dr. Karl A. Menninger, Topeka, Kan., is secretary of the association.

Meeting of Military Surgeons.—The Association of Military Surgeons of the United States will meet in annual session at the Hotel Waldorf-Astoria, New York, October 8-10. Among various other things, the program includes a review of, and demonstration by the One Hundred Second Medical Regiment, Twenty-Seventh Division, and trips to West Point, Mitchel Field, Ellis Island, Army Medical Supply Depot and Naval and other hospitals. Physicians who have or are now serving in the army, navy, marine corps or the reserves, national guard or public health service are eligible to membership on payment of a fee of $5 per year; this includes a subscription to the *Military Surgeon*.

Beware of Mr. Fox.—Reports are coming in from Chicago and vicinity relative to the activities of one George A. Fox or "Alex" Fox. Many years ago Fox attended Rush Medical College for one year but was never graduated by that school. His scheme is to call on physicians, usually graduates of Rush Medical College, and to ask them to cash or endorse a check which turns out to be worthless. A Chicago physician reports that Fox called at his home in the latter part of August and asked him to cash a $5 check drawn on the First Wisconsin National Bank of Milwaukee. The doctor did not cash the check but did endorse it. Fox took the check to a local drug store, in the meantime raising it from $5 to $10, and obtained the money. The check was returned in a few days marked "No Account."

Offer to Aid a Rural Hospital.—The Commonwealth Fund of New York offers to assist in the building of one hospital in a rural section. Conditions are laid down governing the distance from existing hospitals, the number of physicians for staffing the hospital, the character of highways and transportation and the willingness and ability of the community to defray deficits from operation. The fund offers to pay two thirds of the cost of construction and equipment. If the experience in building one such hospital warrants an extension of the program, the Commonwealth Fund will consider

making offers to other districts. Applications are now being received and considered at the office of the Consultant of Rural Hospitals, 289 Fourth Avenue, New York. A decision as to the first unit will be made probably in the early fall.

Narcotic Regulations Revoked.—The Prohibition Commissioner revoked, September 18, the instructions issued by him to narcotic agents and collectors of internal revenue to refuse registration under the Harrison Narcotic Act to applicants convicted of two or more serious violations of the act or of single violations of a flagrant character. The revocation does not cover, however, except by possible implication, the instructions requiring applications submitted by persons arrested and held for action by the grand jury, or indicted, to be held by the collector as under investigation to await the outcome of the trial. It was through action in conformity with the instructions named above that registration was recently refused certain applicants by the Collector of Internal Revenue at Nashville, in which cases the court held that the refusal was without authority of law (THE JOURNAL, August 29, p. 680).

Conference on Pharmaceutical Research.—At the fourth annual meeting of the National Conference on Pharmaceutical Research, Des Moines, Iowa, August 22, a motion was passed directing the chairmen of the ten standing committees to act as a committee to report next year as to the advisability of rearranging the work with the aim of avoiding duplication. The conference passed a resolution endorsing unanimously the Pharmacy Building Campaign and urging the active assistance of all members of affiliated bodies. The census of Research of 1925 was approved by the conference, the chairman was directed to conduct a similar census in 1926 and to keep in touch with the 239 research workers reported in 1925. The Census of Graduate Students will be consolidated with the Census of Research. The research conference elected for the year 1925-1926 H. V. Arny, New York, chairman; J. H. Webster, Detroit, vice chairman, and J. C. Krantz, Jr., Baltimore, secretary-treasurer.

Research in Nervous and Mental Diseases.—A preliminary list of contributions offered for the meeting of the Association for Research in Nervous and Mental Diseases, to be held in New York City in December, includes, among others, "Biology of Sex in Schizophrenia," Dr. Charles E. Gibbs, New York; "The Outcome of Schizophrenic Reactions Observed in Soldiers During the War," Dr. Thomas W. Salmon, New York; "Historical Survey: Pre-Kraepelinian Conceptions, Kraepelin's Contributions, Later Developments," Dr. Adolf Meyer, Baltimore; "The Language of Schizophrenia," Dr. William A. White, Washington, D. C.; "Schizophrenic Reactions in Prisoners," Dr. Herman M. Adler, Chicago; "Prognosis of Schizophrenia," Dr. Edward A. Strecker, Philadelphia; "Schizophrenia and Epidemic Encephalitis, Their Alliances and Differences," Dr. Smith E. Jelliffe, New York; "Endocrine and Biochemical Studies in Schizophrenia," Dr. Karl M. Bowman, Boston, and "Treatment of Schizophrenia," Dr. Henry A. Cotton, Trenton, N. J.

Interstate Postgraduate Assembly.—In the program of the St. Paul meeting, October 12-16, announcement is made of the intention of the managing director to supervise a foreign clinic tour in 1926 to Naples, Rome, Florence, Venice, Bologna, Vienna, Munich, Budapest, Berne, Geneva, Amsterdam, The Hague and Brussels. The tour will start the latter part of April or the first part of May; besides the clinic features there will be trips to scenic points in the various countries. It is also announced that the assembly has established an "interstate community trust fund" under careful legal protection for perpetuating legacies and subscriptions, and that the income from the fund will be used in carrying on its scientific and postgraduate work. The association requests members of the medical profession to remember the foundation in their "Last Will and Testament." Dr. Joseph Schneider, Milwaukee, recently made a gift to the fund of $10,800, which will be maintained as the Schneider Endowment and the income devoted to medical research with particular reference to diseases of the eye.

Society News.—The fifth annual meeting of the American Association of Oral and Plastic Surgeons will be in Philadelphia at the Bellevue-Stratford Hotel, October 26-27. Members of the medical and dental professions are invited to attend the scientific sessions which will be coincident with the clinical congress of the American College of Surgeons.—— At the thirty-eighth annual meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., September 18, Dr. George C. Mosher, Kansas City, was elected president; Drs. Edmund D. Clark, Indianapolis, and Palmer Findley, Omaha, vice presidents; Dr. James E. Davis, Detroit, secretary, and Dr. William G. Dice, Toledo, Ohio, treasurer. The next meeting will be in Chicago, September, 1926.—— At the annual meeting of the American Electrotherapeutic Association, Chicago, September 15-17, Dr. Victor G. Pedersen, New York, was elected president; Drs. Tilman Howard Plank, Chicago, Harry E. Stewart, New Haven, Conn., Norman E. Titus, New York, George J. Ott, Boston, and Curran Pope, Louisville, vice presidents; Dr. John W. Travell, New York, treasurer, and Dr. Richard Kovacs, New York, secretary.

FOREIGN

Tropical Medicine Congress.—The annual meeting of the German Tropenmedizinische Gesellschaft is to be held at Hamburg, October 15-17, in connection with the twenty-fifth anniversary of the foundation of the Tropeninstitut there.

Epidemic Encephalitis in Germany. — The *Münchener medizinische Wochenschrift* states that 156 cases of epidemic encephalitis were recorded in 1924, although notification is not compulsory except in Baden. There were twenty cases in Baden, seven in Bavaria, eight in Hessen, three in Brunswick and 118 in Prussia.

Reduced Visa Rate for Physicians Going to Austria.—Dr. Edward A. Pinkus, secretary of the American Medical Association of Vienna, writes that, on the receipt of a written statement from the American Medical Association at Chicago, that a physician is in good standing in the American Medical Association and that he is going to Vienna for study, the Austrian authorities in the United States will grant to this phyician a reduction of 50 per cent. in the price of the Austrian visas.

Personal.—Dr. Lina Stern, formerly assistant to the professor of physiologic chemistry, University of Geneva, has been appointed to the chair of physiologic chemistry in the University of Moscow.—— Sir Arbuthnot Lane has been appointed an honorary member of the Belgian Académie royale de médecine at Brussels by royal decree.—— The executive committee at Paris of the International Tuberculosis Association has named Dr. Theobald Smith, Princeton, as a new president for the conference which convenes at Washington, Sept. 30, 1926. Prof. K. Faber, Copenhagen, addressed the recent scientific public meeting of the association on "Sanocrysin Treatment of Tuberculosis."

Diploma in Radiology.—The University of Edinburgh proposes to establish a diploma in radiology in connection with the new radiologic department which is being constructed at the Royal Infirmary of Edinburgh, a part of which will be ready for occupancy about Jan. 1, 1926. The course in radiology will include instruction in the use of radium, roentgen ray and ultraviolet radiations, and the lectures on radiology will be delivered by Dr. Woodburn Morison, head of the department. It is planned to keep the course practical and to have it occupy the whole day during a period of nine months. Shorter courses will be arranged for practitioners who have not sufficient time at their disposal to take the complete course.

Council of Medical Education for India.—The *Indian Medical Record* (August) publishes a bill which will be introduced into the legislative assembly to provide for the regulation of medical education in that country. It would establish a Council of Education whose duty it would be to establish a register for India of medical practitioners, and a qualification in medicine equivalent to that in the United Kingdom. The council would comprise a president and six members to be named by the governor general in council; six members to be elected by practitioners registered under the Medical Acts of the Provinces of India who have been on the teaching staff of independent schools; one member on the teaching staff of institutions recognized under this act to be named by each provincial government; one member to be elected by the senate of every university in India established by an act of the government of India; one member from each province to be elected by medical practitioners registered under the Medical Act of the province holding a qualification of a university in the province, and one member from each province to be elected by medical practitioners registered under the Medical Act of the province other than those who hold a qualification from a university in the province. The members of the council would hold office for five years but would be deemed to have vacated their appoint-

ment on absence from the country for more than six months or on absence without sufficient reason from three consecutive meetings of the council.

Deaths in Other Countries

James Stewart Fowler, joint editor of the *Edinburgh Medical Journal* and formerly secretary and registrar of the Royal College of Physicians, specialist in diseases of children, at Elie, Fifeshire, Scotland, August 24.——Dr. **Suleiman Numan Pasha,** professor at the Constantinople medical school, formerly chief of the Turkish army medical department.——Dr. **Fedriani,** professor of surgery at Seville and president of the local medical society.——Prof. **Silva Amado,** Lisbon, of the chairs of hygiene and forensic medicine, senator, formerly president of the local medical society and a leader in public health work, aged 85.——Dr. **R. Quinton,** Paris, a pioneer in promoting aviation, offering in 1908 a prize of 10,000 francs for the first sustained volplane flight. He founded the Ligue nationale aérienne about that time.

Government Services

All Veterans' Bureau Vocational Schools Closed

The director of the Veterans' Bureau has just reported to the director of the budget the return to the U. S. Treasury of $69,701,000 of its appropriation for the last fiscal year. There was a decrease of more than 1,000 employes in the regional offices and about 200 in the central office in Washington. During the ten months ending April 1, 1925, the cost per day per patient in fifty-two Veterans' Bureau Hospitals was reduced from $4.57 to $3.95. All of the twenty-one vocational schools were closed during the year, the completion of training of students being done in private institutions. There were economies made in transporting patients, in the cost of medical examinations and treatments, in the travel of employes, in the building costs, and the accounting systems were revised. The saving was made despite an increase in compensation pay for disability and death benefits of about $14,000,000 over the previous year.

Navy Personals

Commander Curtis B. Munger will be relieved, September 30, from duty in the Bureau of Medicine and Surgery and will report at Mare Island, Calif., for duty on U. S. S. *Relief*. Commander H. W. Smith will succeed Dr. Munger at the Bureau of Medicine and Surgery.——Lieut.-Com. Howard A. Tribou will be relieved from duty at the Naval Hospital, Newport, R. I., and will sail, November 24, from San Francisco for duty with the Asiatic Squadron.——Commander John B. Mears will be relieved from duty at the Naval Hospital, Mare Island, Calif., and sail, November 24, from San Francisco, for duty at the Naval Hospital, Canacao, P. I., as executive officer.

Delegates to Meetings Abroad

Surg. Howard F. Smith, U. S. Public Health Service, has been directed to proceed to Tokio, Japan, and return, for the purpose of attending the Sixth Congress of the Far Eastern Association of Tropical Medicine, to be held in that city, October 11-31.——Surg. Lionel E. Hooper, U. S. Public Health Service, was directed to proceed to Amsterdam, Holland, and return, to attend the Fourth International Conference on Industrial Accidents and Diseases, September 5-12.——Surg. Walter W. King, U. S. Public Health Service, has been directed to proceed to Rome, Italy, and return, to attend the International Congress on Malaria to be held in that city, October 3-5.

Changes in Surgeon General's Office

Lieut.-Col. Joseph F. Siler has reported to the Surgeon General for duty in his office following foreign service in Manila, P. I., and will relieve Major George C. Dunham, who has been in charge of the Professional Service Division.——Col. Carl R. Darnall, after a tour of duty in Hawaii, will report to the Surgeon General for duty in his office as executive officer early in November, succeeding Lieut.-Col. Robert U. Patterson, who assumes command of the Army and Navy General Hospital, Hot Springs National Park, Ark.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 12, 1925.

State Aid for Hospitals

The ministry of health issued a statement with regard to the report of the Voluntary Hospital Commission on accommodations in England and Wales. The distribution of the government grant of $2,500,000 and the corresponding effort made by voluntary agencies have resulted in a marked improvement in the serious financial position of the voluntary hospitals after the war, so far, at least, as current maintenance expenditure is involved. Attention has since been directed particularly to the need for the provision of additional voluntary hospital accommodation. Early in 1924, the minister of health asked the Voluntary Hospital Commission to report the extent of the additional voluntary hospital accommodation required in England and Wales, and the best means of providing and maintaining it. The commission in its report points out that there is no general agreement on the number of hospital beds required for a given unit of the population; and it has not attempted to lay down any ideal standard, as an inquiry could be more usefully directed to consideration of what extensions could be regarded as immediately necessary and possible of accomplishment within a reasonable period. Comparatively little building has been undertaken since 1914, and the hospitals have not, therefore, expanded with the growth of the population. But there has been a distinct improvement in the last two years, though a large proportion of the building undertaken in this period has been in respect of additional accommodation for nurses. As the result of questionnaires issued to the hospitals, it is found that the additional accommodation required outside London amounts in England and Wales to 10,614 beds, and King Edward's Hospital Fund recommends an addition in London of 2,088 beds. The commission regards the London figure as a conservative estimate. But the recommendations of some provincial committees seem to be in excess of the immediate needs; and the commission therefore reduced them by 20 per cent. and recommends that the need in the provinces amounts to 8,000 additional beds. The reports of the local voluntary hospital committees and the experience of the commission in distributing the parliamentary grant of $2,500,000 toward maintenance deficits point to the conclusion that the voluntary system has now recovered sufficiently to be able to undertake the maintenance of the 10,000 additional beds proposed. But, though during the last few years the majority of the hospitals have been able to balance their budgets, there has been no margin out of which capital for expansion on any considerable scale could be provided. Under the circumstances, the commission recommends some measure of state assistance as essential. It advises that at the present-day prices, excluding the cost of site, furniture and equipment, a reasonable figure for the cost of extending plain buildings of a utilitarian character would be $2,000 a bed, and it recommends that the state should provide 50 per cent. of the cost up to a maximum of $1,000 a bed on condition that the remainder of the expenditure is raised locally or is available from existing building funds. The first condition of administering such a grant should be to require each local voluntary hospital committee to submit a scheme for the provision of the necessary new beds in its area, if necessary in consultation with the local committees of any other areas interested. In addition, it would be necessary to require that the beds be provided where they are most urgently needed; that full and effective use be made of them,

and that they be provided at the lowest cost commensurate with the needs of the area. Extensions should, when possible, take place on the periphery instead of at the center, and the erection of costly buildings of elaborate design should in general be discouraged, preference being given to buildings of a utilitarian and durable type.

New Regulations for the Use of Preservatives in Food

New and stringent regulations for the use of preservatives in food have been issued by the ministry of health. The subject is of great importance in this country because of the large proportion of our food that is imported, much from the other side of the world. The new regulations are the result of a report made by a departmental committee appointed in 1923. Its main recommendation is that cold storage should take the place of preservatives. But the present equipment in this country for the purpose is deficient. Time is therefore given for the adoption of the new system. The regulations do not come into force generally until the beginning of 1927, and not for a year later in the case of butter and cream. Chemical preservatives are not entirely forbidden, but they are reduced to sulphur dioxid, including sulphites, benzoic acid and benzoates, in specified proportions and for a limited number of foods. Boric acid is entirely barred—a regulation which has given rise to much protest on the part of the trade and has evoked the old controversy, which seems to be still unsettled, whether in the small quantities used for preserving food it is injurious. The accompanying table shows the foods for which preservatives are allowed, the preservative and the proportion it must not exceed.

Foods for Which Preservatives Are Allowed

Food	Preservative	Parts per million
1. Sausages and sausage-meat containing raw meat, cereals and condiments	Sulphur dioxid	450
2. Fruit and fruit pulp, not dried:		
(a) Strawberries and raspberries	Sulphur dioxid	2,000
(b) Other fruit	Sulphur dioxid	1,500
3. Dried fruit:		
(a) Apricots, peaches, nectarines, apples and pears	Sulphur dioxid	2,000
(b) Raisins and sultanas	Sulphur dioxid	750
4. Unfermented grape-juice and nonalcoholic wine made from such grape-juice if labeled in accordance with the rules contained in the second schedule to the regulations	Benzoic acid	2,000
5. Other nonalcoholic wines, cordials, and fruit juices, sweetened or unsweetened	Either sulphur dioxid or	350
	benzoic acid	600
6. Jam (including fruit jelly prepared in the way in which jam is prepared, but not including marmalade made from citrous fruits)	Sulphur dioxid	40
7. Candied peel	Sulphur dioxid	100
8. Sugar (including solid glucose)	Sulphur dioxid	70
9. Corn syrup (liquid glucose)	Sulphur dioxid	450
10. Gelatin	Sulphur dioxid	1,000
11. Beer	Sulphur dioxid	70
12. Cider	Sulphur dioxid	200
13. Alcoholic wines	Sulphur dioxid	450
14. Sweetened mineral waters	Either sulphur dioxid or	70
	benzoic acid	120
15. Brewed ginger beer	Benzoic acid	120
16. Coffee extract	Benzoic acid	450
17. Pickles and sauces made from fruit or vegetables	Benzoic acid	250

Coloring matters are also restricted. Compounds of antimony, arsenic, cadmium, chromium, copper, mercury, lead or zinc, the vegetable coloring matter gamboge, and the coaltar colors picric acid, dinitrocresol, naphthol yellow, imperial yellow or rosolic acid, are all forbidden.

The regulations as regards labeling are also stringent. They apply to sausages, sausage meat, coffee extract, pickles and sauces and (where the proportion of bezoic acid exceeds 600 parts per million) grape-juice and wine. When any of these articles contains preservative, this fact must be declared on the label. In the case of grape-juice or wine there must be added "and is not intended for use as a beverage." An article sold as a preservative must bear a label declaring the preservative and the percentage present.

The Galilee Skull

The British school of archeology in Jerusalem has discovered the fossil remains of Neanderthal man in Palestine. In the London *Times,* Sir Arthur Keith points out the importance of this discovery. In recent years Neanderthal man has taken the center of the prehistoric stage. It is now certain that for a long time Europe was inhabited solely by this peculiar species of mankind—one that differed much more from any living race than does the modern European from the modern negro. The fossil remains of Neanderthal man have been found in Europe as far south as Gibraltar and Malta, as far north as central Germany, as far west as Jersey, and as far to the east as Croatia, but until now they have never been found outside the limits of Europe. The center of his distribution in ancient times seems to have been the Dordogne region of France; at least it is there that his fossil remains have been found most often, and it was in the cave deposits of that region that we first learned the forms of implements that he fashioned and the extinct kinds of animals that he hunted. Long ago French archeologists gave the name of "Mousterian" to the kind of stone implements he made, and it is now certain that the period of this Mousterian culture was a long one. Sir Arthur Keith is working on the hypothesis that its beginning dates back to about 40000 B. C. and that it came to an end about 20000 B. C. The Mousterian culture was somewhat abruptly replaced in Europe by one of another kind—the Aurignacian, and with this culture appeared men of the modern European type. The transition is too sudden to permit us to suppose that Neanderthal man had been transformed into modern or Neanthropic man; besides, although many of his features were primitive or apelike, others had become so peculiarly specialized that we cannot regard Neanderthal man as an ancestor of modern man.

Mr. Turville-Petre found the cranial fragments near the lake of Galilee in a cave deposit marked by the Mousterian culture; the fossil remains ought to be those of Neanderthal man, if prehistoric culture and race followed the same sequence in Palestine as they did in Europe. The remains consisted of the frontal bone, the right malar, and the right half of the sphenoid. All the bones were perfectly preserved; they were as hard and firm as porcelain; the edges where they joined were clear cut and made a perfect fit when placed in their relative positions. When the parts were put together and placed in their natural relationships, Keith had no doubt that Mr. Turville-Petre's original identification was right; the Galilean man was a member of the Neanderthal species. Thus, even in remote times, Palestine, and, one may legitimately infer, Asia Minor, went with Europe; they had a corresponding race of men and a similar culture. Although the Galilean man is of the Neanderthal species, Keith considers that he represents a peculiar variety of that species, one that makes an approach in several respects to modern man. Neanderthal man, like living man, was broken up into races and breeds. The best known type is that represented by fossil remains found in France, Belgium and Germany—short, stout men with massive heads, which were long, wide, but low and flat in the crown; their heads were bunshaped, their foreheads low and slanting, with great, beamlike orbital ridges, which rivaled those of the gorilla. At Gibraltar another type of Neanderthal man was found—one with a small head and small brain. At Krapina, in Croatia, a still further race or variety was found some twenty years ago; their heads were wide, short and low crowned; the bones of their limbs were more like those of living races than is the

case with the big-headed type of central Europe. The Galilean type finds its nearest European allies in the Croatian or Krapina type, but it differs from that type and all others of Europe in having a narrow and high vaulted skull, in this respect making an approach to modern man. Although the eyebrow ridges are massive and strong, yet the bone enclosing the brain cavity is not thicker than is the rule among European men of today. Keith infers that in point of size the brain of the ancient Galilean fell only a little short of that of the average Englishman of today, whose brain volume measures about 1,480 c.c.

BELGIUM

(From Our Regular Correspondent)

Sept. 5, 1925.

Congress of Ophthalmology

The eighth congress of the Société française d'ophtalmologie was recently held in Brussels. Many foreigners were present at the meeting, among whom were Lawford of London, Bousquet of Quebec, Boulay and Saint Denis of Montreal, Angelucci of Naples and Barraquer of Barcelona. Interesting papers were presented by Morax on the etiology of trachoma, and by van Duyse on "Were Artificial Eyes Known to the Ancients?" Among other interesting communications, I will mention the following:

LOCAL VACCINATION

L. Carrère discussed experiments on animals and clinical cases showing that local vaccination on the eye by means of bouillon vaccines prepared according to the technic of Besredka gives undeniably good results. This method of preventive or curative vaccination should practically replace other modes of vaccination. Local vaccination may be employed alone in the treatment of palpebral affections in the form of an appropriate bouillon vaccine; or, in the treatment of dacryocystitis by lavages of the tear sac. Local vaccination may be employed also as an adjuvant treatment in microbic affections of the cornea.

PATHOGENESIS OF DETACHMENT OF RETINA

Weekers of Liége induced experimentally in the rabbit through cauterization of the sclera a detachment of the retina, which progressed in the same manner as idiopathic detachment in man. The anatomic and histologic examinations elucidate the mechanism of the detachment. At the site of the cauterization the sclera shows no lesion. The choroid, however, is the seat of a marked congestion. An exudate of choroidal origin raises the retina. Under the influence of its own weight, the exudate runs down and splits off the retina. The retina presents a place of least resistance at the level of its pigmentary coat, and splits off at this place with deplorable ease. The exudate coming from above accumulates at the bottom of the ocular cavity, where it undergoes degenerative changes. It persists and interposes itself after the manner of a foreign body and prevents cure of the detachment. Just as in man, we find in animals the appearance of cysts in the detached retina. These cysts are induced by the folding of the retina and by the disordered circulation that results therefrom. The anatomic examination makes it possible to analyze the process of partial recovery that takes place in spots. Moderate inflammatory manifestations having their point of departure in the choroid finally resorb the exudate under the retina. The retina regains its contact at first at a rather circumscribed spot; then the uniting process extends more closely to the adjacent retina. These observations show the method to be followed in bringing about a cure of the detachment.

TREATMENT OF DETACHMENT OF THE RETINA

Gonin of Lausanne recommended bringing about an adherence of the retina to the choroid by means of a scleral puncture followed by deep thermocauterization. This technic should be preceded by a very careful study of the lesion and a minute ophthalmoscopic examination; for the determination of the exact point at which the intervention is to take place is more important than the question of the procedure to be employed (thermocauterization, electrolysis, injection of irritant fluid, etc.). Sourdille of Nantes injects under the conjunctiva 2 or 3 c.c. of a 0.1 per cent. solution of mercuric cyanid, whereby he induces an adhesive reaction between the retina and the choroid. In recent cases he has observed 50 per cent. of recoveries and amelioration in old cases.

VIENNA

(From Our Regular Correspondent)

Sept. 9, 1925.

Age Distribution of the Population of Austria

Toward the end of 1924, the population of Austria was 6,535,363, 52 per cent. of which, or 3,419,102, was under 30 years of age. The various ages (with the exception of four) up to 30 are represented with surprising regularity by something more than 100,000 persons each. Age 30 is represented by fewer than 100,000 nor is this number attained by any age after 30. Ages 4 to 7, inclusive, which reflect war conditions more sharply, fall way below the average, age 5 being represented by only 66,351 and age 7 by only 87,206. The small representation of age 7 is explained when we recall that their birth year fell in 1917-1918. With reference to sex distribution, in 1900 in Austria, as in other European states, the excess of males over females prevailing in the lower ages was in sharp contrast to the excess of females over males that marked the higher age groups. This manifestation, especially in the middle age groups, was much accentuated as the result of the war. Up to age 21 there is an excess of males over females; from then on there is an increasing excess of females over males, which reaches its maximum for ages 30 to 39, in which the excess of women amounts to 75,349. These ages correspond to the birth years 1884 to 1893, which furnished the largest proportion of soldiers during the war. The relative proportion of males and females is almost identical in the cities and in the rural sections.

Disinfection Regulations in Vienna

The municipal public health bureau recently established new regulations pertaining to disinfection after infectious diseases and for prophylactic purposes. These rules are binding on all sanitary organizations. The main emphasis is placed on routine disinfection at the bedside. The experience of the war has not been forgotten that washing of walls, floors and furniture with disinfecting solutions is more efficacious than the use of gases; but in cases of anthrax, smallpox, plague and glanders the disinfection of rooms with gaseous substances also is required. The best chemical for washing surfaces is a 1 per cent. solution of phenol (carbolic acid); also formaldehyd soaps are good. Mercuric chlorid is used less than formerly. For the disinfection of clothing, compound solution of cresol, 2 per cent., is required. The elimination of insects and vermin is important, especially in rooms where foodstuffs are kept. Books and documents must likewise be disinfected, particularly after cases of tuberculosis. The sputum and excrement of tuberculous patients must be well mixed with compound solution of cresol, from 2 to 5 per cent., before they are emptied into the drains; this applies to institutions as well as to private patients. Weight is attached also to terminal disinfection of private rooms in order to make them safe for other members of the family. Disinfectants, to be effective, must not be used in too weak solutions. A 2 per cent. solution of formaldehyd is effective. The formaldehyds have a more agreeable odor than some

other chemicals, but they are more expensive and no better. Phenols, xylenes and toluenes mixed with chlorin are not much more effective. In surgery, the tendency is again to rely not so much on asepsis as on antisepsis. This is because many substances with an almost specific action have been found; for instance, certain dyes of which trypaflavine kills streptococci; rivanol combats staphylococci, and vuzin gets at the deeper tissues. Alcohol has been overestimated as a disinfectant, as it kills only spore-free types of microorganisms and is effective only in certain concentrations (70 per cent.). Absolute alcohol and a weak solution of alcohol are alike practically useless. Moreover, instruments and tissues must remain for some time in alcohol before they become sterile. Tincture of iodin is very useful, although in laboratory experiments its effect is not so good as in vivo. The development of anaerobic bacteria is stayed by iodin. Disinfection in private dwellings is usually done at municipal expense, when a physician has reported a case of a notifiable disease (scarlet fever, smallpox, diphtheria, plague, glanders, anthrax, cholera, typhus, typhoid, erysipelas). In other cases of infectious disease the municipality may require the individual family to bear the expense. Measles is not a notifiable disease.

Phases of Child Welfare Work in Vienna

Vienna is spending large sums of money in caring for children who either cannot be given adequate care by relatives or who, for some reason, have to be admitted to institutions. For the purpose of centralizing control of all phases of child welfare, a unique institute has been created. The headquarters of the institute are in one of the most populous sections of the city. With respect to architectural design and construction, together with sanitary arrangements, the building incorporates many modern features. It contains: (1) a receiving home for children who are to be transferred elsewhere; (2) a pavilion, with a dispensary on the ground floor and a ward for infectious diseases on the second floor; (3) a dissecting room, and (4) nurses' quarters. Children who are referred to the institute by a social welfare worker, a welfare institute, the police department or various other organizations are classed as coming from "suspected sources," and are therefore given a medical examination as soon as admitted. If found to be in need of hospital treatment, they are sent to the adjacent children's hospital; otherwise they are turned over to the nurse in charge of baths. They are then quarantined in the children's home for from sixteen to twenty-one days. In the meantime, the clothing undergoes a thorough disinfection. The institute has accommodation for sixty infants with twelve nurses; forty-eight children under 6 years of age, and 108 children from 6 to 14 years old, a total of 228 persons. All the wards are arranged according to the cubicle system, with five children in each cubicle. The cubicles are separated by glass partitions, and each cubicle has a separate kitchenette, its own bathroom and toilet, and its separate closets for soiled and fresh linen, so that in case of illness in one cubicle strict isolation is possible. There are also rest rooms, and adequate gas, water and electrical equipment. For children with serious illness there is a special ward containing eight entirely separate cubicles, each designed for two children. Then there are, in one large ward, twelve beds isolated by glass partitions, which affords a clear survey of the ward and makes control easy. There are three laboratories and a school dental clinic associated with the institute, although they have no organic connection. Much thought and care have been been given to facilities for isolation of any department in the building. The many separate staircases make possible immediate exclusion of every group of cubicles and every room from all contact with the outside in case infectious disease suddenly develops. In the pathologic department there are pens for experimental animals, together with rooms for operations on animals and for the dissection of animals. A large playground for the children is likewise provided. After the period of quarantine, the children who are healthy but in need of welfare treatment are sent to a home for convalescents, to the main children's home or orphanage, to an institution in the rural sections, or to foster parents; or, if they are ill, they are sent to a children's hospital.

The advantages of this system are: (1) Money appropriated and contributed for philanthropic purposes is no longer partially squandered; (2) exact control of all children belonging to this class is possible; (3) more rapid distribution of the children is effected, and (4) medical control by reliable specialists takes the place of haphazard control of former days. The building necessitated about the same expenditure of money as is usually figured ($1,300 per bed). The plans for the building were drawn up by a committee, with which leading pediatricians and hygienists were associated in an advisory capacity.

Losses of the Vienna Faculty of Medicine

During recent weeks, the medical faculty of the University of Vienna has lost three prominent investigators. Dr. Bum, the orthopedic surgeon, has died. He was the pioneer of massage in surgical affections, which he introduced in Vienna. Also intraneural injections of alcohol in the treatment of sciatica were first recommended by him, and at the time he was holding courses for physicians his lectures were attended by students from all parts of the world. Two other men have received calls to important positions elsewhere: Prof. Béla Schick, the pediatrician, and Professor Eppinger, an investigator in the field of metabolism. Professor Schick's researches on the chemistry of the blood and blood serum in infectious diseases of childhood, more particularly in diphtheria and scarlet fever, have carried his name to distant lands. The Schick test is universally known. He has accepted a call to become the director of a large children's hospital in North America and will sever his connection with the Pirquet clinic. Professor Eppinger has been called to the German University of Prague. He has devoted himself particularly to researches on the functions of the digestive tract, the kidney and the circulatory organs. At the Wenckebach clinic he has had an excellent opportunity to carry out comprehensive studies in this field, and he has developed distinguished ability in this branch. Efforts have been made to hold these men in Vienna, but without success.

An Outbreak of Typhoid in Vienna

Owing to the excellent drinking water of Vienna, typhoid fever has become almost a thing of the past. It happens occasionally that sporadic cases are brought in, but through the action of the health authorities they are soon eliminated. This year, a large number of our citizens spent part of the summer in Italy and brought malaria and typhoid back with them. A short time ago, the death of a child and, soon afterward, the deaths of two adults were announced from a suburb of Vienna, the diagnosis having been "gastric fever." The necropsy findings, however, revealed typhoid, which shows that the medical attention was not quite what it should have been. As a partial excuse it may be said that typhoid has become so rare that many practitioners have ceased to think about it. In the outbreak mentioned, which thus far has been fatal in four out of about twenty-five cases, the necessary isolation measures were not taken at first, but that has been remedied and further progress of the disease seems unlikely. Typhoid about fifty years ago claimed more than 2,000 victims annually in Vienna, whereas now it causes a great sensation if two dozen persons contract it.

BERLIN

(From Our Regular Correspondent)

Sept. 5, 1925.

Suicide in Germany

During the war, suicide in Germany decreased, but in 1922 the incidence rose again to 21.9 per hundred thousand population. In 1923, there were 13,228 cases of suicide, or 21.4 per hundred thousand, which is 91 per cent. of the rate for 1913 (23.5).

Previous to the war, the percentage of suicide—both sexes together—showed a slow steady increase, but with the opening of the war and up to 1918 there was a decrease. After the war, the rate rose rapidly and has recently hovered around 21 per hundred thousand population. The changes differentiated according to sex are even more significant than the fluctuations of the general rate. The incidence of suicide among men, which is considerably higher than the rate for women and therefore has a decisive effect on the fluctuations of the general rate, was about 12 per cent. lower following the war than the rate for 1891. Suicide among women, on the other hand, was increasing before and during the war, and has continued to increase since, so that the rate for women has increased from 25 per cent. up to 45 per cent. of the rate for men. The changes in the social status of women and the fact that they are assuming more and more the cares and duties of labor and industry may be one reason for this increase. However, since the war the increased incidence of suicide among women has affected solely those more than 60 years old. Among men, only those more than 70 years old show increased incidence, which is doubtless because after the war retired business men who were dependent on their property earnings lost a large part of their holdings through the inflation of the mark.

Comparison of the suicide rate of Germany with the rates of various cities shows that towns and cities with more than 15,000 population have higher rates than that of Germany. In general, the suicide rate rises with the size of the town—only in the cities with from 50,000 to 100,000 population were the rates lower than in the smaller towns.

As before the war, if we leave out of consideration the largest cities, the provinces or states having at present the largest suicide rates are: Saxony, Thuringia, Brunswick, Anhalt and Schleswig-Holstein. Of the largest cities, along with Berlin, the principal cities of Saxony, and the seaport cities in the northwest, show the highest suicide rates. Of the states and provinces, Posen-West Prussia, Upper Silesia and Westphalia have the lowest incidence, and of the large urban centers, the industrial cities of Rhenish Prussia and Westphalia.

The differences in the suicide rates of various countries are due chiefly to variations in social and economic conditions, peculiar traits of national character, and varying religious and cultural conditions. Also the mode of collecting statistics in the various countries has some bearing on the subject.

Since the war, so far as appears from available statistics, Denmark is the only country in which the suicide rate has decreased markedly.

The Vital Statistics for Hamburg

The total number of marriages in the city-state of Hamburg in 1924 was 9,918, which is a decrease of 3,766 over the year 1923 (13,684). Compared, however, with 1913, when the number of marriages was 9,362, it marks an increase of 556. Since 1920, there had been a marked decrease in the birth rate, but in 1924 no further decrease was noted. For 1924, the total number of births (including stillbirths) was 16,843, as against 16,641 in 1923. Among the births were thirty foundlings; of the twenty-six infants found dead, six were living births, and twenty were stillbirths. There were 172 twins and two triplets. The number of illegitimate children was 1,796, or 10.66 per cent. of all births, as compared with 13.60 per cent., which was the average for the ten years immediately preceding the war (1904-1913). The number of stillbirths was 575, or 3.41 per cent. of the total, as against 3.27 per cent. in the same ten year period. The total mortality was 13,150 (exclusive of stillbirths), as compared with 14,129 in 1923 and 13,812 in 1913. The mortality rate of 11.47 per thousand population is the lowest ever recorded. Also the infant mortality rate is the lowest on record, being 88.33 per thousand living births, as against 96.13 in 1923; 147.69, the average mortality for the period 1904-1913, and 178.39, the average mortality for the period 1875-1924. The excess of living births over deaths, on the basis of 1,000 population, was 1.64 in 1923 and 2.72 in 1924, which is still very low as compared with 9.55 for the period 1904-1913 and 8.26 for the period 1875-1924.

PRAGUE

(From Our Regular Correspondent)

Sept. 1, 1925.

Death of Kukula

Czech medicine has suffered a second heavy loss through the death of a leader. After Prof. V. Janovsky, whose death was reported recently, Dr. Otakar Kukula, professor of surgery of the Prague Czech Medical Faculty, died, August 11. Kukula came from a medical family. His grandfather was a well known surgeon and his father owned a private surgical hospital in Jicin, northern Bohemia, where his son was born in 1867. Kukula obtained his degree in medicine at the Prague Czech University in 1890. He then went to Vienna, where he studied under Prof. E. Albert. In 1894 he became assistant at the Czech surgical clinic in Prague, and in 1897 lecturer in surgery in the surgical clinic of the Czech Medical Faculty in Prague. With this he was connected until he died. As a young surgeon he spent some months in New York and Chicago hospitals. He visited also surgical hospitals in Russia. In 1901 he became assistant professor and in 1904, after the death of his chief, the head of the surgical clinic. The early work of Professor Kukula was in urology. In 1894 he published a monograph on calculosis of the bladder, in which he gave the chemical composition of bladder stones as well as their microscopic structure. In 1897 he published a study on the rôle of *Bacillus pyocyaneus* in urinary infections. Later he devoted his chief interest to surgery of the peritoneal cavity. He published a number of studies on surgery of the mesentery and of the stomach, but his chief contribution was the explanation of the causes of death in intestinal occlusion. The experimental studies underlying this work were made in the institutes of Professor Horbaczewsky in Prague and of Professor Necki in Petrograd. Kukula produced experimental intestinal occlusions in dogs, extracted chemically the products of the decomposed intestinal contents, and studied the effects of these substances on experimental animals. Later he used extracts from the intestinal contents of clinical cases of intestinal occlusion in human patients. He demonstrated that these substances produced collapse, vomiting, cramps and other symptoms accompanying the clinical picture of intestinal occlusion in man. His papers on this work introduced Kukula to the scientific world and qualified him for the position of chief of the Prague surgical clinic. Another series of his papers is concerned with surgery of the kidneys in relation to the kidney function test. Other articles deal with surgery of the brain, bones and joints, and plastic operations on the muscles and nerves. The total of his studies, published in Czech, German and French, amounts

to forty. In 1913 he published a monograph on the pathology and therapy of the appendix; in 1921, another one on the pathology and therapy of intestinal occlusion. Just before his death he sent to print his large monograph on diseases of the esophagus and stomach. For the current academic year he served as rector of the Czech University in Prague.

Through the death of Professor Kukula, Czech medicine loses not only a surgeon of unusual skill and a scientific investigator of international reputation, but also an excellent teacher. Lecturing was Professor Kukula's favorite task, and he never missed an occasion to show something of interest to his students. This, and his pleasing personality, made him one of the most popular professors of the Czech Medical Faculty. But his energy was not exhausted by his many sided professional activities. He was a pillar of social life and developed the automobile club in Prague. For a whole year he was able to resist the disease that fell on him unexpectedly, but ultimately he succumbed to heart failure.

A New Periodical

Recently the first number of a new Czech monthly periodical appeared in Prague under the name of *Nutrition*. It is devoted to the popularization of scientific discoveries which have a bearing on the economic and hygienic aspects of nutrition of the individual, family and nation. The editor is Dr. Charles Driml, an authority on popular health education. Dr. Driml received his hygienic education at the Johns Hopkins School of Hygiene, and developed the bureau for popular health education in the ministry of health. The first number contains articles on nutrition as a national economic problem in Czechoslovakia, the nutrition of the pregnant woman, and food control as a means for improving the nutrition of the people. The publication of this periodical seems to be another important step toward scientific management of nutrition in Czechoslovakia, a movement inaugurated when the president of the republic made his gift for the erection of the institute for research in nutrition, which is to be connected with the state institute of hygiene in Prague.

Lowered Oxygen Tension and Lung Regeneration

Dr. E. Babák, professor of physiology at the Brno Medical Faculty, at a meeting of the biologic society in Brno, presented the results of his researches on the power of adaptation of lung tissue of animals. Professor Babák put mice into a mixture of 9 per cent. oxygen and 91 per cent. nitrogen under normal atmospheric pressure. While the mice at the beginning showed irritation, they became accustomed to the decreased ogygen content and became quite normal. The lung tissue of the animals was examined under the microscope at different intervals, and as early as eight hours after the beginning of the experiment new capillaries appeared in the walls of alveoli, to which new endothelial cells attached themselves so that new alveoli were formed. In three weeks after the onset of the experiment the microscopic picture of the lung tissue was quite normal, but comparison with the lungs of control animals showed that grossly the lungs of animals exposed to an atmosphere with a lower content of oxygen increased both in size and in weight. The mice that adapted themselves to an atmosphere with lowered oxygen content were able to adapt themselves even further to a medium in which the partial tension of oxygen was so lowered that normal animals when put into the atmosphere soon died. This is the first experiment showing that, in animals, adaptation to a lowered oxygen content results in hypertrophy of the lung tissue so as to insure the necessary supply of oxygen. The application of the results of these experiments, when confirmed also for human physiology, is obvious. The stimulus of lowered oxygen tension could be used for initiating regeneration of lung tissue when some parts of it had been destroyed by pathologic processes. Professor Babák, while suggesting these avenues for clinical research, was far from making final deductions, but is awaiting the results of clinical experiments.

Contribution to Medical History

Prof. C. Zibrt's book on the old Bohemian anatomy and physiology is of wide interest to students of medical history. The book is an anthology of old Bohemian manuscripts. It appears that medicine as an art was highly developed in Bohemia in the fifteenth century, from which time dates the foundation of Prague University with the independent medical school. Medical literature is abundant in the sixteenth century, but becomes scarce in the following centuries, which witnessed the political downfall of the nation. The rebirth of the nation in the eighteenth and nineteenth centuries is marked by the appearance again of prominent medical workers in Bohemia, the outstanding figure of whom is J. E. Purkinje. It is interesting to read the personal hygiene that was written by the personal physicians to the old kings. The oldest complete personal hygiene contained in the book was written by M. Havel to the founder of the Prague University, Charles IV (1316-1378). A similar document, written by J. A. Comenius (1592-1670), the pedagogist, reveals his methods of popular health education. All the documents show how well developed was Czech medical terminology even at that time. While many things appear ridiculous in the light of modern medical knowledge, other things that were arrived at through experience have stood the test of time and have found explanation in modern experimental medicine. There are many old traces of organotherapy, dietetics and theories on the spread of infectious diseases. The book reprints in full the manuscript of Matous Dacicky's "On the Wonderful Fabric and Composition of the Human Body," written in 1574, which is the most complete document of its kind in old Czech medical literature.

Vacancies in Army Medical Service

A discussion is going on in the medical press on regulation of the medical service in the Czechoslovak army. This has become an acute problem because more than one third of the positions in the army medical service are vacant, especially in the lower grades. This state of affairs is especially alarming for the future when the present experienced army surgeons die. This condition prevails in spite of the general overproduction of young physicians in this country. An attempt was made to attract young physicians into the army by granting scholarships to medical students in the last two years, under the condition that after graduation they serve in the army for a number of years. Even this arrangement did not bring the results that were expected. In order to maintain the medical service in the army it was necessary to engage civilian physicians under contract. A proposal was brought forward to organize the medical service in the army exclusively on this basis and to do away with the army medical service as such. This proposal provoked strong resistance on the part of experts in army sanitation, who maintain that the army medical service is a specialty that should be recognized just as any other type of special medical service. The proper discharge of army medical service can be performed only by those who have made it their life work and who have prepared themselves for it by special education and experience. The only remedy they see for the present unsatisfactory state of affairs is in better remuneration of army surgeons so that they would not be compelled to depend to a considerable degree on private practice, as is the case at present. If the modern army is to be a school of life for the growing male population, instruction in healthy living is to be the chief task of the army physician.

Deaths

Henry Rose Carter ✠ Assistant Surgeon General, U. S. Public Health Service, died at his home in Washington, D. C., September 14, aged 73. In 1900 he published a paper recording observations made in 1898 on the interval between infecting and secondary cases of yellow fever. Dr. Walter Reed, impressed by these observations, was led by them to the idea of an intermediate host, the mosquito, as the important factor in the spread of the disease, later established by the Yellow Fever Commission.

Dr. Carter graduated from the University of Virginia in civil engineering in 1873 and from the University of Maryland School of Medicine, Baltimore, in 1879. He then entered the United States Public Health Service, continuing constantly with that organization until his death. For many years he was closely associated with the control of yellow fever and malaria in the Southern states, publishing his first paper on "Yellow Fever Mortality in Havana" in 1900. He inaugurated a quarantine system in Cuba in 1899, and from 1904 to 1909 was director of hospitals in the Panama Canal Zone. His work on yellow fever was so striking that Sir Ronald Ross recommended him for the Nobel prize in medicine in 1904, and further recognition was given to him when he was commissioned Assistant Surgeon General by a special act of Congress in 1915. His papers previous to 1915 were devoted largely to yellow fever. In 1914 he turned his attention to malaria, and published valuable observations over several years. Dr. Carter went to Central and South America as a member of the Rockefeller Foundation Yellow Fever Commission in 1916; was in charge of malaria work for the Public Health Service, 1917-1918; was sanitary adviser to the Peruvian government, 1920-1921, and had been a member of the Yellow Fever Commission of the International Health Board since 1920. He was a clear analyst and a practical thinker in the field of preventive medicine; for almost half a century he lent valuable assistance to the governments of the world in the control of tropical diseases. In *Hygeia* for January and February, 1925, he recorded personal experiences in such work, giving a true picture of the romance of preventive medicine.

HENRY ROSE CARTER, M.D., 1852-1925

Roland Edward Skeel ✠ Los Angeles; University of Michigan Medical School, Ann Arbor, 1890; member of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons (president, 1921-1922); member of the Los Angeles Obstetrical Society and the Los Angeles Surgical Society; dean, 1902-1910, and professor of gynecology, 1910-1911, Cleveland College of Physicians and Surgeons; associate clinical professor of gynecology, Western Reserve University School of Medicine, 1911-1920; formerly on the staffs of the Cleveland City, Lutheran, Lakewood and St. Luke's hospitals; served in the M. C., U. S. Army, during the World War; aged 56; died, September 4, at Covena, Calif.

George Alson Suffa ✠ Boston; State University of Iowa College of Homeopathic Medicine, Iowa City, 1888; Hahnemann Medical College and Hospital of Philadelphia, 1889; member of the American Academy of Ophthalmology and Oto-Laryngology; formerly on the staffs of the Westboro (Mass.) Insane Hospital and the Massachusetts Homeopathic Hospital; aged 68; died, September 6.

Oliver Tydings ✠ Chicago; University of Maryland School of Medicine, Baltimore, 1877; member of the American Academy of Ophthalmology and Oto-Laryngology and the Chicago Ophthalmological Society; on the staff of the John B. Murphy Hospital; aged 71; died, September 12, of cerebral hemorrhage.

William Clifford Gardner ✠ Louisville, Ky.; George Washington University Medical School, Washington, D. C., 1919; formerly on the staff of the Methodist Hospital, Pikeville; aged 35; died, September 10, at the SS. Mary and Elizabeth Hospital, of peritonitis, following an operation.

Lewis Robert Monday, Richland, Mo.; Washington University School of Medicine, St. Louis, 1904; member of the Missouri State Medical Association; served in the M. C., U. S. Army, during the World War; aged 53; died, August 16, following a long illness.

Robert E. L. Flippen, Pilot Mountain, N. C.; Baltimore Medical College, 1892; member of the Medical Society of the State of North Carolina; past president of the Surry County Medical Society; member of the county board of health; aged 54; died, September 1.

James Taylor, Jr. ✠ Worcester, Mass.; Medical School of Harvard University, Boston, 1900; specialized in ophthalmology, otology, laryngology and rhinology; aged 56; died. September 2, at Portland, Maine, following an operation.

George Thomas Divers ✠ Stuart, Va.; University College of Medicine, Richmond, 1909; served in the M. C., U. S. Army, during the World War; on the staff of St. Martin's Hospital; aged 44; died August 29, of angina pectoris.

Herbert Kenning, Painesville, Ohio; Detroit College of Medicine and Surgery, 1886; member of the Ohio State Medical Association; for six years county health commissioner; aged 63; died, August 26, at Cheboygan, Mich.

Carlton Myron Cook ✠ Baltimore; Baltimore Medical College, 1893; for many years associate professor of obstetrics at his alma mater; formerly on the staff of the Maryland General Hospital; aged 65; died, September 8.

Eugene Pressley Cason, Talladega, Ala.; University of Alabama School of Medicine, Tuscaloosa, 1890; member of the Medical Association of the State of Alabama; aged 58; was accidently shot and killed, September 3.

Walter Amazia Domer, Wabash, Ind.; University of Illinois College of Medicine, Chicago, 1901; member of the Indiana State Medical Association; aged 52; died in August, at a sanatorium in Indianapolis.

Robert Jackson Yates, Alexandria, Va.; George Washington University Medical School, Washington, D. C., 1907; member of the Medical Society of Virginia; aged 61; died, July 8, of chronic nephritis.

John Francis O'Connor, Worcester, Mass.; College of Physicians and Surgeons, Baltimore, 1896; member of the Massachusetts Medical Society; aged 57; died, August 1, of carcinoma of the mouth.

Frank B. Teague, Piedmont, Ala.; Medical Department University of Tennessee, Memphis, 1880; member of the Medical Association of the State of Alabama; aged 73; died, September 3.

Stephen S. Barat ✠ Chicago; College of Medicine and Surgery, Chicago, 1903; medical director, Public Life Insurance Company; aged 58; died, September 15, of cerebral hemorrhage.

Charles Thompson Brown ✠ Cedar Rapids, Iowa; Chicago Homeopathic Medical College, 1896; aged 59; died suddenly, September 3, at St. Luke's Methodist Hospital, of cerebral hemorrhage.

Edmund Stowe Douglass ✠ South Barre, Mass.; University of Vermont College of Medicine, Burlington, 1910; aged 37; died, August 29, at Holden (Mass.) District Hospital.

Farmer Hinton Letson, Decatur, Ga.; University of Georgia Medical Department, Augusta, 1902; aged 49; died, September 2, at a sanatorium in Atlanta, of heart disease.

George Henry Hahn, Newark, N. J.; Columbia University College of Physicians and Surgeon, New York, 1902; member of the school board; aged 46; died, September 3.

Edward W. Neal, Goose Creek, Texas; Central University of Medicine and Science, Jersey City, 1900; aged 56; died, September 3, at Lynchburg, of heart disease.

Alfred H. Bays, Woodland, Miss.; University of Alabama School of Medicine, Tuscaloosa, 1879; aged 85; died, September 4, of cerebral hemorrhage.

Benedict H. E. Edelen, Gorin, Mo.; College of Physicians and Surgeons, Chicago, 1884; aged 65; died, September 6, at a hospital in Kansas City.

Ashurst Howard Norman, Brookfield, Mo.; National University of Arts and Sciences Medical Department, 1876; aged 80; died, August 30.

Leonard T. Green, Shattuck, Okla.; University of Louisville (Ky.) School of Medicine, 1893; aged 69; died, August 18, of chronic nephritis.

Bernard W. Switzer ✠ Lexington, Va.; College of Physicians and Surgeons, Baltimore, 1893; aged 55; died, September 2, of heart disease.

Blair Sanford Stewart, Bethany, Mo.; Northwestern Medical College, St. Joseph, 1893; aged 64; died, September 5, of paralysis agitans.

Asbury B. McTeer, St. George, S. C.; Meharry Medical College, Nashville, Tenn., 1893; aged 61; died, September 1, of heart disease.

Edward R. Stone ✠ Philadelphia; Jefferson Medical College of Philadelphia, 1872; aged 74; died, September 9, of heart disease.

Theodore F. Wood ✠ Angola, Ind.; University of Wooster Medical Department, Cleveland, 1869; aged 85; died, August 27.

Clifford J. Sawyer, Laramie, Wyo.; College of Physicians and Surgeons of Indiana, Indianapolis, 1877; aged 71; died, August 30.

Thaddeus Burritt Kent, Marion, Iowa; Rush Medical College, Chicago, 1884; aged 76; died recently, following a long illness.

Frederick William Maercklein ✠ Oakes, N. D.; Milwaukee Medical College, 1897; aged 50; died, September 4.

Cyrus M. Sparkman, Cassville, Mo.; Missouri Medical College, St. Louis, 1886; aged 67; died, September 6.

E. D. Little, Union City, Tenn.; Louisville (Ky.) Medical College, 1874; aged 77; died, September 2.

J. Addison Morrett, Mechanicsburg, Pa. (licensed, Pennsylvania, 1881); aged 79; died recently.

Daniel K. Cornell, Chico, Calif.; St. Louis Medical College, 1867; aged 85; died, August 29.

Marriages

EDWARD JOHN GOTTHELF, JR., Tucson, Ariz., to Mrs. Ernestyne Norris Ferguson of El Paso, Texas, July 8.

BAYARD LEE LIGGETT, Mill Creek, W. Va., to Miss Mips Gatewood Preston Cameron of Mace, August 26.

WILLIAM CHARLES BUCHBINDER, Chicago, to Miss Louise May Woolf of Highland Park, Ill., July 18.

WALTER BLAINE FELGER, Danville, Ga., to Miss Elfrieda Thomas of Hempstead, N. Y., September 5.

JAMES G. BRUCE, Fulton, Mo., to Miss Maude MacLeod of Providence, R. I., at St. Louis, in June.

CHESTER ANDERSON WITMER to Miss Annie Laurie Walker, both of Waycross, Ga., August 12.

D. JOSEPH DUGGAN, Wakefield, Mass., to Miss Barbara E. Russell of Rutland, Vt., June 27.

MANUEL G. GICHNER to Miss Bertha L. Moses, both of Baltimore, August 17.

H. T. ANTRIM to Miss Phyllis K. Lane, both of Philadelphia, May 6.

The Propaganda for Reform

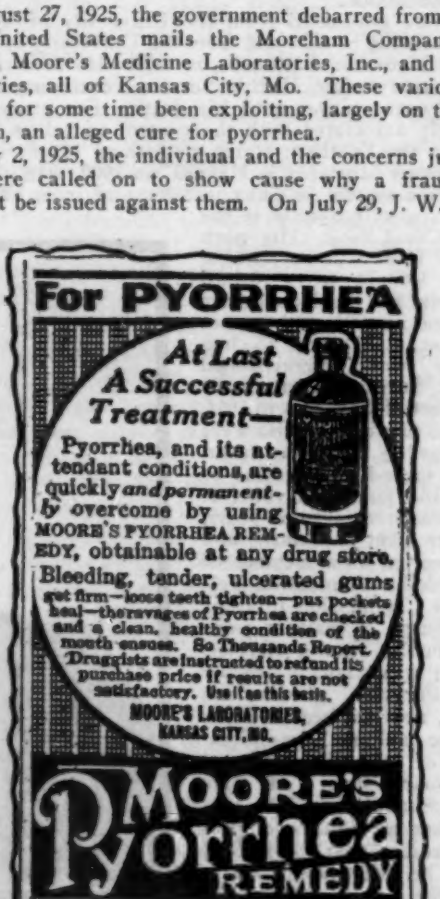
IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

THE MOORE PYORRHEA REMEDY FRAUD

The Government Closes the Mails to Another Swindle

On August 27, 1925, the government debarred from the use of the United States mails the Moreham Company, Fred Hamilton, Moore's Medicine Laboratories, Inc., and Moore's Laboratories, all of Kansas City, Mo. These various concerns had for some time been exploiting, largely on the mail-order plan, an alleged cure for pyorrhea.

On July 2, 1925, the individual and the concerns just mentioned were called on to show cause why a fraud order should not be issued against them. On July 29, J. W. Farrar,


For PYORRHEA
At Last
A Successful
Treatment—
Pyorrhea, and its attendant conditions, are quickly and permanently overcome by using MOORE'S PYORRHEA REMEDY, obtainable at any drug store.
Bleeding, tender, ulcerated gums get firm—loose teeth tighten—pus pockets heal—the ravages of Pyorrhea are checked and a clean, healthy condition of the mouth ensues. So Thousands Report.
Druggists are instructed to refund its purchase price if results are not satisfactory. Use it on this basis.
MOORE'S LABORATORIES,
KANSAS CITY, MO.
MOORE'S
Pyorrhea
REMEDY

A typical newspaper advertisement of the Moore's Pyorrhea Remedy fraud.

an attorney of Kansas City, Mo., and one D. E. Combs of Chicago, appeared at the office of the Solicitor of the Post Office Department at Washington in connection with the case. Combs claimed to be interested in the matter from the standpoint of having advised the various concerns in connection with their advertising.

Before giving the government's case against this concern, as detailed in the memorandum to the Postmaster General of Judge Horace J. Donnelly, Solicitor of the Post Office Department, the following facts are of interest:

In April, 1922, the Bureau of Investigation of the American Medical Association had a letter written in answer to an advertisement that had appeared shortly before in the Chicago *Herald and Examiner*. The advertisement was headed in large black letters "Pyorrhea Can Now Be Cured," and sufferers from this condition were urged to send their names and addresses to "Moore's Laboratories" at Kansas City, Mo. In a few days a letter came, not from "Moore's Laboratories," but "Moore's Medicine Laboratories, Inc.," stating that a sample of "Moore's Treatment for Pyorrhea" was being sent. Accompanying this form-letter was a four-page sheet of testimonials, an order blank and a return envelope. About a month later a follow-up letter came from the Moore's

Medicine Laboratories, Inc. In this, as is usual with mail-order quackery, the price was reduced and an offer was made to send a $3 bottle for $2. No order was sent in and six months later still another letter came offering Moore's Pyorrhea Remedy for $1.

Nothing further was heard from the concern until March, 1924, at which time a circular letter was received on the stationery of "Moore's Laboratories" declaring that the concern was offering some valuable premiums to those who would send in a combination order for the Pyorrhea Remedy and Tooth Paste. It was worthy of note that the stationery of "Moore's Laboratories" and that of "Moore's Medicine Laboratories, Inc.," showed that the personnel of these concerns was the same, namely:

Dr. George F. Abrahams, president.
John J. Abrahams, treasurer.
George H. Moore, vice-president.
Dr. L. R. Smith, secretary.

According to the same stationery both concerns were capitalized at $250,000 and both gave for references the Commerce Trust Company of Kansas City. These points will be found of interest in what follows.

Judge Donnelly in his memorandum to the Postmaster General states that after carefully reviewing all the evidence in the case he found the facts to be, in part, as follows:

"The business of the Moreham Company, which is that of selling a so-called pyorrhea cure through the mails, was started by Mr. Fred Hamilton on July 1, 1924, as sole owner. The business is extensively advertised through the Hawthorne Advertising Agency, which is also operated by Hamilton, and through the Allen C. Smith Advertising Agency. The advertising cost has been about $300 per month. The literature used was prepared by the Smith Agency. Gross receipts are shown to be about $6,000 per annum. There are no physicians, chemists or pharmacists employed by the Moreham Company, nor are there any other employees, the entire business being handled by Mr. Hamilton.

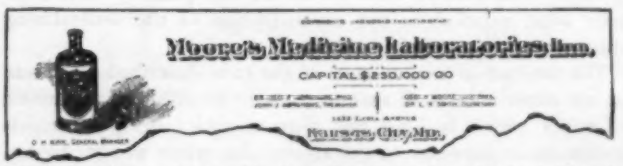
"According to the evidence, the medicine sold is prepared by 'Moore's Medicine Laboratories, Inc.,' located at the same address as the Moreham Company. The first named concern uses 1422 Lydia Street, Kansas City, Missouri, as the address on its literature, while the latter named concern uses 1420 Lydia Street, but the entrance to the above addresses is through the same door. The evidence shows that Hamilton has a small desk in the office of Moore's Medicine Laboratories, Inc. This latter concern was incorporated in 1921 under the laws of the State of Arizona, its officers being J. W. Farrar, president, George H. Moore, vice-president, L. R. Smith, who is a graduate of a veterinary school, secretary, and John Abraham, treasurer. Mr. Moore is alleged to be the discoverer of the pyorrhea medicine, as well as of another product known as 'Moore's Tooth Paste.'

"In an interview between the post-office inspector and Mr. Smith of the Moore's Medicine Laboratories, Inc., the inspector was informed that the Moore's Medicine Laboratories, Inc., handles only the 'Moore's Pyorrhea Remedy' and the tooth paste, and that it sells to the wholesale drug trade. Mr. Smith claimed that the pyorrhea medicine was sold to Hamilton just as it was sold to the drug trade, that he (Hamilton) printed his own labels and that the ingredients of 'Moore's Pyorrhea Remedy' were the same as 'Moore's Pyorrhea Treatment' sold by Hamilton under the name of the Moreham Company, except that the latter is stronger and more concentrated. On his letterhead, and in his literature, Hamilton claims that his concern is the 'exclusive' distributor of the medicine. The ingredients of the medicine will be referred to more in detail later herein.

"The evidence shows that the gross business of the Moore's Medicine Laboratories, Inc., is about $1,000 per month. The concern claims that it does not advertise to sell to laymen, but the evidence before me shows that the medicine is sold by the concern to customers direct through the mails."

Judge Donnelly's memorandum further shows that while "Moore's Medicine Laboratories, Inc.," and "Moore's Laboratories" claim that they had no direct connection with Hamilton and the Moreham Company, the evidence in the case contradicated this claim. The memorandum then quotes some of the extravagant and unwarranted claims made for the alleged pyorrhea remedy. The nostrum was analyzed in the Bureau of Chemistry, and the analysis is incorporated in a report submitted to Solicitor Donnelly by L. F. Kebler, M.D., chemist in charge of Special Collaborative Investigations, U. S. Department of Agriculture.

The analysis in the report shows that Moore's Pyorrhea Treatment consisted essentially of emulsified coal-tar cresol with a little pyridine or coal-tar base, emulsified with rosin soap. As Dr. Kebler's report declared, there was nothing new in the Moore mixture; all of the ingredients, their therapeutic action and value are well known to physicians gen-



Greatly reduced photographic facsimile of the letter-head of Moore's Medicine Laboratories, Inc. This fraud, which has been debarred from the use of the mails gave as a reference the Commerce Trust Company.

erally, the nostrum would not heal a case of pyorrhea, it would not cause "receding, inflamed and bleeding gums" to become "firm and pink," it would not "tighten loose teeth," nor would it "conquer pyorrhea" by causing the germs to "just clump right up and quit the job."

In view of all the evidence, Judge Donnelly declared in his memorandum to the Postmaster General that it was a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises, and he, therefore, recommended that a fraud order be issued.

Correspondence

SERUM FOR INFANTILE PARALYSIS

To the Editor:—In view of the definite increase in the number of cases of infantile paralysis in the various parts of the country this summer, it may be of interest to know that serum from patients who have recovered has been used recently with several satisfactory results. A child, aged 4½ years, developed typical preparalytic symptoms; a lumbar puncture was done and spinal fluid containing 500 cells to the cubic millimeter was found. At the time of the puncture the patient had a temperature of 102, was toxic and showed the typical muscular twitchings that belong to this stage of the disease and indicate the penetration of the central nervous system by the virus. Fifteen cubic centimeters of serum from a patient who had recovered was run into the spinal canal, and immediately thereafter 50 c.c. was given intravenously. At the end of four and a half hours a second intravenous dose of 50 c.c. of the same serum was given. During the ensuing ten hours the temperature rose to 104 and dropped again to 102. Because the temperature did not come down completely, a third intravenous injection of 50 c.c. of the recovered serum was given. The child appeared to be much better within a few hours of this third dose; the temperature returned to normal and no paralysis developed.

It was my experience during the epidemic of 1916 that cases which presented a clinical picture of the severity which this one did, and also showed as many cells in the spinal fluid at that particular stage in the disease before paralysis developed, practically without exception went on to severe paralysis or death. The case that has just been cited is, of course, described only as an example and is not advanced as an argument in itself for the value of this method of treatment—obviously, one case is insufficient for this purpose.

The number of cases that I have seen respond in this way, however, to the use of large doses of serum from human

patients who have recovered leads me to believe that this method holds real hope of prevention of paralysis, provided that the serum is introduced before paralysis has appeared and in sufficient quantity. The previous results reported of cases treated with the serum of patients who have recovered were never very encouraging, but this lack of success depended, I believe, on the fact that only very small quantities, 10 or 15 c.c., were used in any given case. It has been shown that the neutralizing bodies are present in human serum, but their concentration is not very great. Consequently, with this as with all serum, the quantity used must bear some relation to the concentration of the neutralizing substances, or antibody content.

The amount of serum used in the case described has been, in my experience, sufficient to prevent paralysis in a number of cases which had all the characteristics of those which would have gone on to paralysis. In other words, 15 c.c. intraspinally, with 150 or 200 c.c. intravenously in the course of from twelve to twenty-four hours, would seem to be a reasonable dose of the serum. It must be emphasized again, however, that the serum is of no value if paralysis has already appeared.

The question of obtaining the amount of 200 c.c. of human serum involves a certain amount of difficulty, but there is no reason why these difficulties should not be surmounted. It requires approximately 500 c.c., or less, of blood to yield from 220 to 250 c.c. of serum. This amount of blood is now frequently and easily obtained for transfusion purposes. There would seem to be no reason why health departments should not collect serum from patients who have recovered. If necessary, this blood could be purchased just as it is for transfusion purposes; but there is a great probability that persons who have themselves suffered from paralysis would be willing to give their blood for the purpose of preventing paralysis in some one else.

While there is at present a good deal known about the mechanism of acute poliomyelitis, it is perhaps true that not all of this information has yet been made practically applicable. There seems very good reason to believe that the diagnosis of this disease can be and should be made in the preparalytic stage. Not only in epidemic times should physicians be on the lookout for infantile paralysis. The more alert the profession becomes to the possibility of the simple gastro-intestinal upsets being actually the symptoms of onset of poliomyelitis, the better will be the chances of preventing paralysis.

Two things, therefore, are necessary for the successful prevention of paralysis by the use of serum from patients who have recovered. First of all, a preparalytic diagnosis must be made, and, secondly, a sufficient amount of serum must be used both intraspinally and intravenously.

In advocating the use of the serum of patients who have recovered, it is necessary to make reference to the serum prepared by E. C. Rosenow from horses inoculated with a special streptococcus isolated by him from patients with infantile paralysis. This serum does not neutralize a virus which is capable of producing the experimental disease in monkeys: nor has any one ever produced infantile paralysis in monkeys with any streptococcus. In previous communications I have drawn attention to the possibility of danger connected with the intraspinal use of a foreign serum in acute poliomyelitis. In cerebrospinal meningitis in which the lesion does not involve the cord, the possibility of reaction to the presence of a foreign serum may be fraught with less danger than in the case of poliomyelitis in which the lesion involves the anterior horn cells. In this instance a very slight increase in hyperemia may cause the destruction of the cells.

George Draper, M.D., New York.

SCARLET FEVER PREPARATIONS

To the Editor:—Since we described a skin test for susceptibility to scarlet fever and preventive immunization of susceptible persons with the sterile toxin, and the corresponding antitoxin for therapeutic and prophylactic treatment, various commercial biologic concerns have been producing the toxin. Some have also been distributing serums under the label of "Scarlet Fever Streptococcus Antitoxin."

On inquiry and testing, we found that much of the toxin was made from broth to which considerable amounts of horse blood had been added, thus introducing, quite unnecessarily, the possibility of sensitizing to horse serum during the course of preventive immunization with the toxin. Some preparations of the toxin were not standardized with sufficient accuracy to give dependable results; and most of the toxin was put out in doses too small to produce satisfactory immunization in many susceptible persons.

Much of the serum sold as scarlet fever streptococcus antitoxin was put out in the unconcentrated and unrefined state. We learned that some commercial firms were standardizing scarlet fever antitoxin by a modification of the method which we described and on which we had based the minimum potency requirement and the prophylactic and therapeutic dosage. This modification is such that some serums, not sufficiently potent to meet the minimum requirement by the original test, may be passed by the modified test.

Proper preparation, accurate standardization, and adequate dosage are essential to the successful use of both the toxin and the antitoxin. To insure these, so far as possible, we applied for patents on the materials. Our claims have been granted by the United States government, and the administration of the patents has been entrusted to the Scarlet Fever Committee, which has been organized and incorporated for this purpose. We are to receive no royalties from the committee and no consideration for turning the patents over to the committee other than the assurance that the products licensed under the patents will be made and tested by specified methods, and put out in the doses that seem most satisfactory in the present state of our knowledge. This arrangement will also facilitate the introduction of improvements as they are developed.

We wish to make it clear that we are not in a position to recommend the use of preparations not licensed by the Scarlet Fever Committee, even though such preparations bear our name on the label, or the accompanying literature claims that they are made according to our methods. All preparations licensed by the Scarlet Fever Committee will be so labeled.

George F. Dick, M.D.,
Gladys Henry Dick, M.D., Chicago.

Dust Explosion.—According to the U. S. Bureau of Chemistry, more than 22,000 establishments in this country are manufacturing dusty products such as starch, cocoa and spice, or producing dust during the manufacture of their products. The hazard of dust explosion exists in these plants and in warehouses where large quantities of dusty products are handled. There were forty-five lives lost in the last year, twenty-eight employees injured and about $3,000,000 worth of property destroyed in dust explosions and fires resulting from them. The American Chemical Society in announcing results of investigation by the Bureau of Chemistry reported, September 6, that practically all combustible dust and some not generally considered combustible will explode when mixed under favorable conditions with the proper proportion of air and ignited by a flame or spark. It was said that no record of a spontaneous dust explosion has ever been obtained and that some spark or flame or other source of ignition must be present to ignite the dust. The Bureau of Chemistry announced that it would make tests of samples of dust in plants for owners to determine the explosibility.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

WATER GAS—CARBON MONOXID POISONING

To the Editor:—Kindly refer me to any literature regarding poisoning to a person working in a gas plant where illuminating gas is made, using the "water gas" process. Is carbon monoxid poisoning possible from such a source? If so, how soon would it show up? What are the symptoms, duration, after-results and treatment?

T. A. R., M.D., Springfield, Ill.

ANSWER.—Water gas (producer gas) is used to a great extent in the larger cities of the United States, whereas in England the sale of this gas to the consuming public has been looked on with disfavor because of its toxicity; it contains mainly hydrogen and carbon monoxid. Poisonings from such illuminating gas are due to carbon monoxid. This has been demonstrated by observers (THE JOURNAL, March 8, 1913, p. 737) by the presence of carbon monoxid in the blood. The literature on carbon monoxid poisoning has grown enormously in the last ten years, so that space does not permit the discussion of the toxicology and treatment.

The United States Public Health Service has published two excellent reports on carbon monoxid which may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C.:

Sayers, R. R., and Yant, W. P.: The Elimination of Carbon Monoxide from Blood, by Treatment with Air, with Oxygen, and with a Mixture of Carbon Dioxide and Oxygen, 1923, price, 5 cents.

Sayers, R. R., and Davenport, Sara J.: Carbon Monoxide Literature; forty-four pages of discussion and an extensive bibliography; price, 10 cents.

These reprints may also be obtained (with additional literature) through the A. M. A. Package Library Service, 535 North Dearborn Street, Chicago.

HYGROMETERS FOR STATIC MACHINES

To the Editor:—What is the chemical that is used to put on the indicator in a static machine to tell when there is considerable moisture in the machine? The card turns red, I believe, when there is much moisture in the atmosphere.

G. A. FOOTE, M.D., Grenville, N. M.

ANSWER.—Practically the only moisture indicating devices used in static machines have been the horsehair hygrometers or similar instruments. The general practice now seems to be not to use such indicators, but to keep a liberal supply of anhydrous calcium chlorid (the container should be covered with gauze) or concentrated sulphuric acid in the machines at all times, to remove excess moisture; ordinary commercial lye, in open dishes, has also been reported as satisfactory. These should be renewed frequently, as judged by appearance, and by the operating efficiency of the machine.

Paper hygrometers are made by saturating white blotting paper with a liquid generally containing cobalt chlorid with other substances; the paper is then hung up to dry. The following formula is taken from Henley's Twentieth Century Recipes and Processes (1922 edition revised, p. 402):

Cobalt chlorid	25	gm.
Sodium chlorid	12.5	gm.
Calcium chlorid	4	gm.
Acacia	6	gm.
Water	75	c.c.

The amount of moisture in the atmosphere is indicated roughly by the changing color of the impregnated paper, as follows:

Rose red	Rain
Pale red	Very moist
Bluish red	Moist
Lavender blue	Nearly dry
Blue	Very dry

THE BACTERIOPHAGE

To the Editor:—From the standpoint of the practicing physician, what is the present status of d'Herelle's bacteriophage? That is, is the discovery still in an experimental stage, or has sufficient clinical usage developed to regard it as a distinct advance in medical practice? In what diseases to date has the bacteriophage treatment been successfully applied? Has any work been done along this line, say in gonorrhea and in tuberculosis, with clinical results sufficiently encouraging to warrant any predictions as to future success? In cancer? Is there any connection between bacteriophage treatment and the various auto-inoculation procedures suggested (which seem to have limited vogue today)?

J. B. H. W., Blanchester, Ohio.

ANSWER.—The use of bacteriophage in treatment is still wholly in the experimental stage. It cannot be said that there is any conclusive evidence at hand to show the value of bacteriophage treatment in any disease, and no predictions are warranted. There is no obvious relation between bacteriophage treatment and so-called auto-inoculation.

AZOOSPERMATISM

To the Editor:—I am suffering from azoospermatism. Is there any known remedy for such an ailment? If there is please describe it. Please omit name and address.

M.D., P. I.

ANSWER.—Some cases of azoospermatism are due to obstruction in the genital tract. When due to this cause, a small number may be rendered fertile by making an anastomosis between the vas deferens and a part of the epididymis to the testicular side of the obstruction.

Cases due to absence of both testes or failure of the testes to produce spermatozoa are not amenable to treatment.

COLLODAURUM

To the Editor:—I am enclosing a letter I received of a cure for cancer. Kindly give me what information you have concerning Collodaurum.

E. M. WILSON, M.D., Lima, Ohio.

ANSWER.—From the circular matter that is sent out for Collodaurum by the Ideal Skin-Suture Material Company, Two Rivers, Wis. (which acts as distributor for the Kahlenberg-Klaus Company, Two Rivers, Wis.), it appears that this is essentially the same as the product formerly marketed as "Colloidal Gold." The "colloidal gold" of the Kahlenberg-Klaus Company was reported on by the Council on Pharmacy and Chemistry (THE JOURNAL, Jan. 31, 1925, p. 387). The Council reported that the manufacturer of "colloidal gold" referred to a publication by Dr. E. H. Ochsner as evidence for the claim that the remedy has proved far superior to the roentgen ray and radium in the treatment of inoperable cases of cancer and also as a postoperative treatment. The Council further reported that an examination of this evidence shows that until more critically studied cases supported by microscopic examination of the tissues are reported in which there has been demonstrable retrogression or disappearance of the tumors, there is no reason for believing that "Colloidal Gold" offers anything more in the treatment of carcinoma than do the other colloidal preparations that have preceded it.

COMPATIBILITY OF CODEIN PHOSPHATE AND SODIUM BROMID IN SOLUTION

To the Editor:—Please let me know whether codein phosphate and sodium bromid are incompatible in solution.

G. T. C., M.D., Salt Lake City.

ANSWER.—Codein phosphate and sodium bromid are both soluble in water; codein hydrobromid, according to the literature, is soluble about 1 part in 80 parts of water. The A. M. A. Chemical Laboratory reports that a solution containing codein phosphate, 2.5 per cent., and sodium bromid, 2.5 per cent., was allowed to stand several days with no apparent physical change; hence in these concentrations the two products appear to be compatible. Another solution was prepared containing codein phosphate, 2.5 per cent. (same concentration as in the previous test) and sodium bromid, 12.5 per cent. (five times stronger than in the previous test). The solution was allowed to stand over night. A white crystalline precipitate was produced which formed an almost solid mass in the test tube. Tests indicated that the precipitate was codein hydrobromid. It appears, therefore, that codein phosphate is not compatible with sodium bromid solutions, except when the latter is in relatively low concentration.

In a solution containing codein phosphate, 2.5 per cent., and sodium chlorid, 20 per cent., no precipitate was produced, which indicates that the incompatibility reported in the foregoing paragraph was due to the formation of the hydrobromid of the alkaloid and not to simple "salting out" effect.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

AMERICAN BOARD OF OTOLARYNGOLOGY: Chicago, Oct. 19. Sec., Dr. H. W. Loeb, 1402 South Grand Blvd., St. Louis, Mo.

ARIZONA: Phoenix, Oct. 6-7. Sec., Dr. W. O. Sweek, 404 Heard Bldg., Phoenix.

CALIFORNIA: Sacramento, Oct. 19-22. Sec., Dr. Charles B. Pinkham, 906 Forum Bldg., Sacramento.

COLORADO: Denver, Oct. 6. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DISTRICT OF COLUMBIA: Washington, Oct. 13. Sec., Dr. Edgar P. Copeland, Stoneleigh Court, Washington.

FLORIDA: Tallahassee, Oct. 13-14. Sec., Dr. W. M. Rowlett, Citizens Bank Building, Tampa.

GEORGIA: Atlanta, Oct. 13-15. Sec., Dr. C. T. Nolan, Marietta.

HAWAII: Honolulu, Oct. 12-15. Sec., Dr. Guy C. Milnor, 401 Beretania St., Honolulu.

IDAHO: Boise, Oct. 6. Commissioner of Law Enforcement, Mr. F. A. Jeter, Boise.

ILLINOIS: Chicago, Oct. 6-8. Director, Mr. A. M. Shelton, Capitol Bldg., Springfield.

IOWA: Des Moines, Oct. 14-16. Dir. of Examinations and Licenses, Mr. H. W. Grefe, Des Moines.

KANSAS: Topeka, Oct. 13. Sec., Dr. Albert S. Ross, Sabetha.

MICHIGAN: Lansing, Oct. 13-15. Sec., Dr. Guy L. Connor, 707 Stroh Bldg., Detroit.

MINNESOTA: Minneapolis, Oct. 6-8. Sec., Dr. Thomas S. McDavitt, Lowry Bldg., St. Paul.

MISSOURI: Kansas City, Oct. 27-30. Sec., Dr. James Stewart, Jefferson City.

MONTANA: Helena, Oct. 6. Sec., Dr. S. A. Cooney, Power Bldg., Helena.

NATIONAL BOARD OF MEDICAL EXAMINERS: Part III, Baltimore, Oct. 15. All applications for this examination must be made on or before Oct. 1. Sec., Dr. J. S. Rodman, 1600 Walnut St., Philadelphia.

NEVADA: Carson City, Nov. 2. Sec., Dr. Simeon L. Lee, Carson City.

NEW JERSEY: Trenton, Oct. 20-21. Sec., Dr. Alex. Macalister, Trenton Trust Bldg., Trenton.

NEW MEXICO: Santa Fe, Oct. 12-13. Sec., Dr. W. T. Joyner, Roswell.

RHODE ISLAND: Providence, Oct. 1. Sec., Dr. Byron U. Richards, State House, Providence.

UTAH: Salt Lake City, Oct. 6. Director of Regis., Mr. J. T. Hammond, 412 State Capitol Bldg., Salt Lake City.

WEST VIRGINIA: Charleston, Oct. 13. Sec., Dr. W. T. Henshaw, Charleston.

WYOMING: Cheyenne, Oct. 5-7. Sec., Dr. G. M. Anderson, State Capitol, Cheyenne.

Maryland June Examination

Dr. Henry M. Fitzhugh, secretary of the Maryland Board of Medical Examiners, reports the written examination held at Baltimore, June 16-19, 1925. The examination covered 9 subjects and included 90 questions. An average of 75 per cent. was required to pass. Of the 92 candidates examined, 87 passed and 5 failed. Twelve candidates were licensed by reciprocity. One candidate was licensed by endorsement of credentials. The following colleges were represented:

PASSED		
College	Year Grad.	Per Cent.
Yale University	(1922)	87, (1924) 84.5
Howard University School of Medicine	(1925)	77, 83
George Washington University School of Medicine	(1924)	87
University of Kansas School of Medicine	(1922)	78
Tulane University	(1924)	86.8
Johns Hopkins University	(1922)	90, (1923) 78.8, (1924) 87.5, 91, (1925) 79, 79.6, 80.7, 82, 82, 82, 82.7, 82.7, 83, 84, 84, 84, 86.5, 86.6, 89, 91.6, 92, 92, 93, **
University of Maryland	(1924)	78.5, 81, 81, 85, 85.7, 86, 87, (1925) 75, 78, 79.7, 81, 81, 81, 82, 82, 82.6, 82.6, 82.8, 82.8, 83, 83.6, 84, 84.5, 84.7, 84.8, 86, 86, 86, 86.8, 87, 87, 87.8, 88, 88, 88, 89, 89.7, 90, 90.8, 91.5, 92
Maryland Medical College	(1911)	75
University of Michigan Medical School	(1925)	86
Jefferson Medical College	(1923)	81, 84, (1924) 85, (1925) 85
University of Pennsylvania	(1924)	86
Meharry Medicinal College	(1924)	76.7
University of Toronto Faculty of Medicine	(1923)	86.5
McGill University Faculty of Medicine	(1924)	83.7
University of Vienna, Austria	(1923)*	82.8
University of Munich, Germany	(1922)*	83
University of Wurzburg, Germany	(1920)*	75
Donskey University, Russia	(1920)*	75
University of Petrograd, Russia	(1921)*	78.8

FAILED		
College	Year Grad.	Per Cent.
Howard University School of Medicine	(1925)	70
Loyola University School of Medicine	(1925)	**
Ekaterinoslaw State Medical Academy, Russia	(1921)*	71
University of Kharkov, Russia	(1912)*	70
University of St. Vladimira, Kief, Russia	(1922)*	52.5

LICENSED BY RECIPROCITY		
College	Year Grad.	Reciprocity with
George Washington University (1920) West Virginia	(1923)	Dist. Colum.
American Medical Missionary College (1903) Calif.	(1906)	Michigan
College of Physicians and Surgeons, Baltimore	(1912)	W. Virginia
Tufts College Medical College	(1905)	Maine
University Medical College of Kansas City	(1899)	S. Carolina
Creighton Medical College	(1919)	Nebraska
Columbia University	(1914)	Dist. Colum.
Medico-Chirurgical College of Philadelphia	(1898)	Penna.
Medical College of the State of South Carolina	(1915)	S. Carolina
University of Virginia	(1922)	Dist. Colum.

ENDORSEMENT OF CREDENTIALS		
College	Year Grad.	Endorsement with
Johns Hopkins University	(1922)	N. B. M. Ex.

Dr. Fitzhugh also reports that two candidates were licensed by special examination. The following colleges were represented:

College	Year Grad.	Per Cent.
Rush Medical College	(1899)	**
Johns Hopkins University	(1916)	**

* Graduation not verified by American Medical Association.
** No grade given.

Vermont June Examination

Dr. W. Scott Nay, secretary of the Vermont Board of Medical Registration, reports the written examination held at Burlington, June 24-26, 1925. The examination covered 12 subjects and included 90 questions. An average of 75 per cent. was required to pass. Forty-eight candidates were examined, all of whom passed. One candidate was licensed by reciprocity. The following colleges were represented:

PASSED		
College	Year Grad.	Per Cent.
University of Louisville	(1917)	82.8,
College of Physicians and Surgeons, Boston	(1905)	76.4
Harvard University	(1923) 89.1, (1924)	88.6
Tufts College Medical School	(1925)	81.1
University of Vermont	(1911) 75, (1921) 85.1, (1924) (1925) 81.1, 82.4, 82.5, 83.1, 83.1, 83.5, 83.8, 83.9, 83.9, 84.1, 84.1, 84.1, 84.4, 84.7, 84.7, 85, 85, 85.2, 85.2, 85.2, 85.2, 85.3, 85.8, 85.8, 85.8, 86, 86.2, 86.4, 86.4, 87,7, 88.1, 88.1, 89.1, 89.2, 90.1	82.2,
McGill University Faculty of Medicine	(1923)	85.1, 89.7, (1924) 83.4, 83.1, 84.6

LICENSED BY RECIPROCITY		
College	Year Grad.	Reciprocity with
Boston University School of Medicine	(1898)	Mass.

Book Notices

HEREDITARY DISORDERS OF BONE DEVELOPMENT. Part I. Diaphysial Aclasis (Multiple Exostoses). Multiple Enchondromata, Cleido-Cranial Dysostosis. By Percy Stocks, M.D., D.P.H. With the Assistance of Amy Barrington. University of London. The Treasury of Human Inheritance. Edited by Karl Pearson, F.R.S. Volume III. Francis Galton Laboratory for National Eugenics. Eugenics Laboratory Memoirs. XXII. Paper. Price, 45 shillings net. Pp. 182, with illustrations. London: Cambridge University Press, 1925.

Abnormal growths of bone occurred in primitive man. This fact has been established by the discovery in the Ile d'Yeu of exostosis of the tibia on a human skeleton dating from neolithic times. Disorders of bone development have been found on skeletons of vertebrates as far back as the cretaceous age, but it is only within the last half century that the hereditary character of certain types of these disorders in man has been determined. The present study opens with a section on the normal development of bone, followed by a consideration of the pathology of bone development. By 1890, about forty families had been described as exhibiting exostoses in two or more members, the first one being reported in 1837. Usually the development of exostosis is arrested with the cessation of skeletal growth, and in twenty-four cases in which the necessary data were obtained, the average age was 17½ years. Occasionally, exostoses diminish in size after reaching their maximum, and have been known to disappear entirely; in other cases, after an apparent cessation of growth a sudden recrudescence occurs. The number of exostoses found on one person ranges from one up to a thousand. In one of Fischer's families, four brothers in the first generation had two or three exostoses on the femur and tibia; in the second generation, three brothers had a large number of small growths widely scattered; in the third generation, three brothers and a cousin each had two or three exostoses of large size, chiefly on the ulna and tibia, and in the fourth generation a child 3 years of age developed tibial exostosis. In Maclean's families, a brother and sister in the first generation had fifty-two and thirty-one exostoses, respectively; the four children of the brother had seventy-

nine, eighty-three, 101 and 108 exostoses, respectively. A table of this family shows the inheritance from parent to child in 372 pairs as regards single or multiple growths. In thirty-three instances in which the parent had a single growth, the child had a single growth in ten, whereas in 339 instances in which the parent had multiple growths, the child had a single growth in only six. When the distribution of the growths is unilateral in a parent, the tendency is for the distribution to be bilateral in the child in about half of the cases and to remain unilateral in about one fifth. When the distribution is bilateral in a parent, it tends to remain bilateral in the child in about 60 per cent. of the cases and to become unilateral in about one tenth of them. Out of 1,124 cases of multiple exostoses, excluding those with associated enchondromas, 727 gave a definite history of the disorder occuring among relatives. There is an extensive bibliography at the close of each chapter, and plates showing heredity of multiple exostoses in certain families. There are also photographs and roentgenograms of cases.

SURGERY OF THE EYE. A Hand-Book for Students and Practitioners. By Irvin Török, M.D., Surgeon to the Herman Knapp Memorial Eye Hospital, and Gerald H. Grout, M.D., Surgeon to the Herman Knapp Memorial Eye Hospital. Second edition. Cloth. Price, $6.50. Pp. 484, with 510 illustrations. Philadelphia: Lea & Febiger, 1925.

It is obviously impossible to compress into 450 pages a complete treatise on surgery of the eye; it is essential that generalities be considered at greater length than details of individual operations. This the authors have succeeded in doing, as is pointed out in the introduction, written by Arnold Knapp. The surgical anatomy of the eye and adnexa is well and clearly written, although somewhat more attention might well have been paid to the all important angle of the anterior chamber. The first 110 pages are devoted to the general technical phases of ophthalmic surgery, the necessary instruments and their use, and forms a section of great value for the beginner in this field. The subsequent chapters take up the surgery of the especial parts, headed in every instance by the indications for operation. Then come descriptions of the various operations aimed at the same end-result, one operation serving to illustrate various ones of the same class. The intra-operative and postoperative complications and their management are discussed at sufficient length, and the postoperative care is given the necessary space. The proofreading and printing are excellent, and the illustrations, for the major part, are well drawn and really illustrative. It would seem that conservatism is the keynote of this book, which is written essentially for beginners in ophthalmic surgery. Some of the opinions expressed differ from those held by ophthalmic surgeons of experience, but the beginner will not go amiss in following the dicta laid down in the text. For example, it is stated that an incomplete total keratoplasty has never been successful; the recent works of Elschnig and Ascher have proved to the contrary; but a keratoplasty is no operation for a tyro to attempt.

THE DENTIST'S OWN BOOK. A Faithful Account of the Experiences Gained During Forty-Six Years of Dental Practice, Including a Complete Bookkeeping and Recording System and a Description of the Management of a Dental Practice. By C. Edmund Kells, D.D.S. Cloth. Price, $7.50. Pp. 510, with 116 illustrations. St. Louis: The C. V. Mosby Company, 1925.

This gives an account of the author's experience during forty-six years of dental practice, and includes a complete bookkeeping and recording system. It is not an autobiography, but rather a book of good advice to the practitioner of today. The style of the book serves to acquaint those who have not had the good fortune to know Dr. Kells with a unique personality. Dr. Kells has always been a critical observer and, to the ordinary mortal, tantalizingly exact. This book reflects on every page his delightful personality and his keenness for details. It is easy to read and is replete with information of value to every practitioner. It is divided into three parts: Part 1 consists of a brief summary of the qualities necessary to successful practice; Part 2 is devoted to dental economics, and Part 3 carries the title Jambalaya. The chapter on dental economics consists of 144 pages and gives, to the most minute detail, descriptions of record and bookkeeping systems adapted for large and small offices, with instructions for practice management, including the handling of patients. The third chapter, of 314 pages, is devoted largely to office efficiency, and includes carefully written descriptions of the reception room, business office, operating room and laboratory. The book is full of good advice to both the beginner and the practitioner of experience.

Medicolegal

"Sound Health" and "Good Health" Practically Same

(Metropolitan Life Ins. Co. v. Chappell et al. (Tenn.), 269 S. W. R. 21)

The Supreme Court of Tennessee, in holding valid a provision in a life insurance policy that the insurance company assumed no obligation thereunder unless the insured was in "sound health" at the date of the policy, says that, as used in life insurance policies, there is no material difference between "sound health" and "good health." The phrase "sound health," when used in the sense that it was in the policy in this case, is not to be taken literally. It does not mean perfect health, or imply absolute freedom from bodily infirmity or tendency to disease, but means generally the absence of any vice or disease in the constitution of a serious nature, or that had a direct tendency to shorten life, as contradistinguished from a temporary ailment or indisposition. That one is in "good health," within the contemplation of such provision of a life insurance policy means that he or she has no grave, important or serious disease, and is free from any ailment that seriously affects the general soundness or healthfulness of his or her system. The application of the condition in a policy that the company assumes no obligation unless the insured was in sound health at the date of the policy is not controlled by the insured's knowledge or lack of knowledge that he was not in sound health. It is the fact of sound health of the insured which determines the liability of the insurance company in this character of policies, not apparent health, or the insured's or any one's opinion or belief that he was in sound health.

Testimony Not Prohibited by Statute—As to Lucid Intervals in Senile Dementia

(In re Williams' Estate (Wis.), 202 N. W. R. 314)

The Supreme Court of Wisconsin, in affirming a judgment in favor of the contestants of a will wherein it was found that the testatrix was not of testamentary capacity, says that the medical testimony chiefly relied on by the contestants was that of a physician at a sanatorium where the testatrix was in the mental ward in April and May, to which sanatorium she was again removed, July 17, between which times she was at another sanatorium. The will was made, July 19. The testimony of this physician was to the effect that on the date of the will, and for some time before, the testatrix had senile dementia in an advanced stage, and was not competent to make a will. He had treated her years before, and after the execution of the will, while in his sanatorium. While she was at his sanatorium in April and May she was the patient of another physician, at whose sanatorium there had been a fire—the other sanatorium mentioned above. A hypothetic question was asked the witness in which he was told to disregard any information he obtained during any professional treatment, and he testified as stated above; that during April and May he frequently saw the testatrix and talked with her; that she would shake hands and smile, but did not recognize him, and did not know where she was. It was urged that all this testimony of the physician was incompetent under Section 4075 of the Wisconsin Statutes. But the information on which he based his testimony was not gained while treating the testatrix professionally, and therefore the evidence was not prohibited by the statute. According to his testimony, he rendered no professional services for her while she was in the care of the other physician. It is a matter of common knowledge that physicians are sometimes somewhat jealous of any interference with their treatment of their own patients

by other physicians, unless it is requested, and there seemed no reason to doubt the testimony of this witness on this subject. He was asked to exclude any information he had gained while he had treated the testatrix, and to answer solely on such knowledge as he had gained while not acting as her physician, and he stated that he could do so. The statute should be liberally construed to effect its purpose, but not so strictly as to exclude the opinion of a physician as to the mental condition of a person, based on observation alone during a given period, because the physician may have rendered professional service for that person at an earlier or later time.

There was a very able argument by way of explanation of the medical condition of the testatrix, and along the line that there was a lucid interval when the will was executed. But the only medical witness who had special experience in mental diseases testified that on the date of the execution of the will the testatrix was in the last stages of senile dementia, and that in advanced stages of senile dementia there are no lucid intervals. In *Estate of Bean*, 159 Wis. 67, 149 N. W. 745, in which senile dementia was claimed, it was said that "the mind gradually loses its alertness and power of concentration until it is no longer capable of forming an intelligent judgment. When that period arrives, it is probable that there are no lucid intervals, although the person afflicted may be brighter at some periods than at others."

That the habits of neatness and care of the testatrix for her personal appearance had changed to those of greatest neglect and indifference, the court deems a change far more significant than if it were to occur in the life of one of the other sex.

Physicians and Surgeons of Employees—Privilege

(Johnson v. Missouri Pac. R. Co. (Ark.), 269 S. W. R. 67)

The Supreme Court of Arkansas says that according to the testimony of the plaintiff, after he had sustained personal injuries while in the employ of the defendant as a locomotive fireman, he was first examined by the physicians of the Missouri Pacific Hospital Association at Fort Smith, and they were not certain as to the extent of his injuries. He was a member of the association, and his dues, together with those of the other employees of the railroad company, kept up the various hospital associations of the railroad, and the physicians and surgeons employed therein were paid by these dues. Therefore it followed that all these physicians and surgeons were the physicians and surgeons of the employees of the railroad company.

Owing to the uncertainty as to the extent of his injuries, the plaintiff agreed with the claim agent of the railroad company to go to St. Louis and be examined with a view of ascertaining the extent and character of his injuries in order that he might settle therefor with the claim agent. After the plaintiff had been examined by the surgeon at St. Louis, the latter was called as a witness on the trial of the case to testify on behalf of the defendant as to the character and extent of the plaintiff's injuries. The plaintiff objected to his testifying, but the trial judge allowed him to testify in behalf of the defendant, over the plaintiff's objection. But a physician in charge of a railroad hospital, whose services are compensated by assessments on the wages of the railroad employees, acts in a professional employment, within the rule excluding communications made by a patient to his physician, in the course of professional capacity in examining an injured employee who is sent to the hospital, and eliciting information as to his injuries on the day of the examination.

Counsel for the defendant admitted the correctness of the general rule, but attempted to differentiate this case on the ground that the plaintiff agreed with the claim agent of the railroad company to go to St. Louis and be examined by the general surgeon in charge of the hospital there in order to learn the character and extent of his injuries with a view to a settlement. This did not make any difference. The General Hospital Association at St. Louis was kept up by contributions from the employees of the railroad, and the physicians and surgeons in charge were the physicians and surgeons of the employees. The plaintiff had it in his mind to be treated by the surgeon there as well as to be examined with a view to making a settlement with the railroad company. If he afterward changed his mind, and did not wish to settle or treat with the railroad company, he had the right to do so, and this would not constitute a waiver of the privilege.

To this the court adds the statement that when the plaintiff went to St. Louis he reported to the chief surgeon of the General Hospital Association at St. Louis. The chief surgeon assigned the case to another surgeon, who was a member of his staff. It was true that the latter surgeon did not devote all of his time to surgical operations at the Missouri Pacific Hospital at St. Louis, but nevertheless he was a member of the general staff, and was paid by the employees of the railroad company for his services in that respect. His was the testimony which it is held was erroneously allowed to go to the jury.

Testimony Based on Urinalysis Made in Own Laboratory

(Willis v. Buchanan County Quarries Co. (Mo.), 268 S. W. R. 102)

The Kansas City (Mo.) Court of Appeals says that in this action to recover damages for personal injuries the physician who had attended the plaintiff testified that he had had a sample of urine examined, and, over the defendant's objection that it called for hearsay, was permitted to testify that the urine showed blood, some albumin, casts, urates and phosphates. The question was then asked: "What was the significance of that?" and the defendant moved to strike out the answer on the ground that it was an examination made by somebody else, but the motion was overruled. On cross-examination the physician stated that the urinalysis was made in his laboratory where he had all his work done, but he didn't remember whether or not he was right in there when it was made; that he was basing his answer as to the examination of the urine on the report made to him by somebody else in his laboratory. The court of appeals does not consider that there was error in permitting the physician to give testimony based on the so-called secondary or hearsay evidence, the testimony showing that the analysis was made in the physician's laboratory and under his supervision, besides which his testimony on this point was supplemented by that of two other physicians, who testified to the same conditions.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 20-24. Dr. Luther C. Peter, Chestnut and 20th Streets, Philadelphia, Secretary.

American Association of Railway Surgeons, Chicago, Oct. 21-23. Dr. Louis J. Mitchell, 29 East Madison Street, Chicago, Secretary.

American College of Radiology and Physiotherapy, Chicago, Oct. 19-22. Dr. Roy W. Fouts, 121 South 33d Street, Omaha, Neb., Secretary.

American College of Surgeons, Philadelphia, Oct. 26-30. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.

American Public Health Association, St. Louis, Oct. 19-22. Mr. Homer N. Calver, 370 Seventh Avenue, New York, Executive Secretary.

Association of Military Surgeons of the United States, New York, Oct. 8-10. Col. J. R. Kean, U. S. A. Ret., Army Medical Museum, Washington, D. C., Secretary.

Central Neuropsychiatric Association, Ann Arbor, Oct. 23-24. Dr. Karl A. Menninger, Neuropsychiatric Clinic, Topeka, Kan., Secretary.

Central States Pediatric Society, Chicago, November 6-7. Dr. H. T. Price, Westinghouse Building, Pittsburgh, Secretary.

Colorado State Medical Society, Colorado Springs, Sept. 29-Oct. 1. Dr. F. B. Stephenson, Metropolitan Building, Denver, Secretary.

Delaware State Medical Society, Wilmington, Oct. 13-14. Dr. W. O. La Motte, Industrial Trust Building, Wilmington, Secretary.

Interstate Postgraduate Assembly of America, St. Paul, Minn., Oct. 12-16. Dr. W. B. Peck, 82 Stephenson St., Freeport, Ill., Managing Director.

Kansas City Clinical Society, Kansas City, Mo., Oct. 5-9. Dr. James R. McVay, Rialto Building, Kansas City, Mo., Secretary.

Kentucky State Medical Association, Owensboro, Oct. 5-9. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.

Missouri Valley, Medical Society of the, St. Joseph, Sept. 30-Oct. 2. Dr. Charles Wood Fassett, 115 East 31st Street, Kansas City, Mo., Secretary.

Pennsylvania, Medical Society of the State of, Harrisburg, Oct. 5-8. Dr. Walter F. Donaldson, Jenkins Arcade, Pittsburgh, Secretary.

Southern Medical Association, Dallas, Texas, November 9-12. Mr. C. P. Loranz, Empire Bldg., Birmingham, Ala., Secretary.

Vermont State Medical Society, St. Johnsbury, Oct. 15-16. Dr. William G. Ricker, 29 Main Street, St. Johnsbury, Secretary.

Virginia, Medical Society of, Richmond, Oct. 13-16. Miss Agnes V. Edwards, 104½ West Grace Street, Richmond, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL for a period of three days. No foreign journals are available prior to 1920, nor domestic prior to 1923. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Public Health, Albany, N. Y.

15: 673-756 (Aug.) 1925

Part of State Health Departments in School Hygiene Programs. E. R. Kelley, Boston.—p. 673.
*Direct Cultivation of Mycobacterium Tuberculosis. J. A. Cancik and N. Mazepova, Prague, Czechoslovakia.—p. 679.
Rôle of State in Industrial Hygiene. E. R. Hayhurst, Columbus, Ohio.—p. 681.
Typhoid Fever Epidemic at Soldier Summit, Utah. J. Wallace, Salt Lake City.—p. 686.
Humidity Control in Residences. P. Drinker, Boston.—p. 689.
*Successful Hookworm Control with Chenopodium-Carbon Tetrachlorid. H. R. O'Brien, Bangkok, Siam.—p. 696.
*Bacteriologic Data on Chlorin Treatment of Repiratory Diseases. H. J. Nichols, J. S. Simmons and J. P. Hitchens, Washington, D. C.—p. 699.
Use of Civic and Religious Organizations in Public Health. J. J. Durrett, Memphis, Tenn.—p. 708.

Cultivation of Tubercle Bacillus.—An egg-agar culture medium has been devised by Cancik and Mazepova for the direct cultivation of *Mycobacterium tuberculosis*, which is not colliquated by the contaminating bacteria.

Hookworm Control in Siam.—More than 225,000 persons have been treated in Siam since May, 1923, with a mixture of chenopodium (40 per cent.) and carbon tetrachlorid (60 per cent.). This mixture combined the efficiency of carbon tetrachlorid in dealing with hookworms and the virtues of chenopodium in removing other parasites present. The dilution with carbon tetrachlorid served to lessen the discomfort of taking. The maximum dose was 2 c.c. Only three deaths were reported which on investigation were found to have any connection with the campaign treatment.

Chlorin Treatment of Respiratory Diseases.—This paper by Nichols, Simmons and Hitchens is a summary of the results of bacteriologic studies of the recently proposed chlorin treatment of respiratory diseases. It is part of a combined clinical and laboratory investigation which has been carried on by a board of officers for nearly a year at the Army Medical School and Walter Reed Hospital. The chlorin treatment, in their hands, has given no evidence of even partial sterilization of the mucous membranes of the upper air passages. It does not kill *B. prodigiosus* sprayed on these membranes. The authors are of the opinion that, in the doses used, the chlorin is neutralized and becomes inert, and that effective doses are too toxic.

Archives of Otolaryngology, Chicago

2: 111-216 (Aug.) 1925

End-Results of Sinus Surgery in Children. J. J. Shea, Memphis, Tenn.—p. 111.
Bilateral Recurrent Nerve Paralysis Due to Aortic Aneurysm. P. B. MacCready, New Haven, Conn.—p. 122.
Restoration of Lacrimal Passage after Excision of Sac. J. F. Callahan, Brockton, Mass.—p. 127.
*Ephedrin Sulphate, Alkaloid of Ma Huang. G. Fetterolf and M. B. Sponsler, Philadelphia.—p. 132.
Lung Abscesses Cured by Bronchoscopy. M. C. Myerson, New York.—p. 136.
Paranasal Cavities. Review of Literature of 1924. H. W. Loeb, St. Louis.—p. 141.

Ephedrin Sulphate.—Fetterolf and Sponsler assert that as a drug for local use in the nose ephedrin sulphate has all the advantages of epinephrin and perhaps none of the disadvantages. The extreme degree of nasal irritation which so frequently follows the local use of the latter drug was conspiculously absent in all cases in which the drug was used.

Arkansas Medical Society Journal, Little Rock

22: 61-80 (Aug.) 1925

Medical Practice Act—Reversal of Medical Ethics on Advertising. C. M. Rosser, Dallas, Texas.—p. 61.
Nurses Taught Bandaging. J. M. Lemons, Pine Bluff.—p. 63.
Hernia Through Foramen of Winslow. M. E. Foster, Fort Smith.—p. 64.
Necessity and Selective Method of Removing Tonsils in Toto. D. E. White, El Dorado.—p. 67.
Hysterectomy. G. C. Cannon, Hope.—p. 72.

Atlantic Medical Journal, Harrisburg, Pa.

28: 725-810 (Aug.) 1925

*Diagnosis of Tuberculosis in Childhood. C. H. Smith, New York.—p. 725.
Infant Mortality in Certain Community. J. D. Donnelly, Harrisburg.—p. 732.
Bullous Keratitis Associated with Sinus Disease. J. M. Griscom, Philadelphia.—p. 740.
Cerebellar Abscess. W. D. Chase, Bethlehem.—p. 742.
*Technical Aspects of Acute Appendicitis. G. P. Müller, Philadelphia.—p. 749.
*Surgical Treatment of Chronic Sciatica. W. J. Taylor, Philadelphia.—p. 756.
Treatment of Diabetes in Private Practice. H. G. Schleiter, Pittsburgh.—p. 758.
Kümmel's Disease. A. E. Colcher, Philadelphia.—p. 763.

Diagnosis of Tuberculosis in Child.—Smith says that in a child, tuberculosis in the bronchial nodes is the most frequent lesion found, and is at the same time very easily overlooked. When a child is seen who is pale and droopy, distinctly undernourished, or with a history of loss of weight, with bright eyes, long lashes, and hairy arms and nape, tuberculosis should be suspected. A positive tuberculin test will show that the child harbors the bacillus. Then a temperature record should be kept to see if there is activity of the process. A careful physical examination, with especial attention to the interscapular region, will often show a tracheal whisper to the fifth or sixth dorsal spine, and occasionally an asymmetrical upper line of pulmonary resonance. The lungs should also be examined with great care, especially in the nipple region and axilla, for persistent râles here are suggestive, as are signs of dry pleurisy or effusion. The superficial nodes must all be palpated, and the abdomen carefully searched for masses or ascites. The spine and bones must be thoroughly examined. Signs of early meningitis, such as crossness, headache and vomiting, must not be forgotten.

Appendicitis.—It appears from Müller's study that not only must the necessity for early operation and the avoidance of catharsis still be preached, but also that the surgeon himself, in order to avoid complications, must individualize his patients, and push to the limit every means for the proper care of the local area of disease and for the combating of the constitutional toxemia.

Surgical Treatment of Chronic Sciatica.—Emphasis is laid by Taylor on the fact that all cases of chronic sciatica are not suitable for operation, but only those which cannot be relieved of pain by the ordinary medical measures (rest in bed, electricity) and which are affected for a sufficient length of time to eliminate the probability of recovery without some more radical probability. Taylor has operated eighteen times on sixteen patients, with almost uniformly good results, relieving the pain and permitting the individuals to return to their work. All of them had suffered such pain that they could not continue their employment. There have been no mortality or complications in this series, all the patients making rapid and uninterrupted surgical recoveries. The operation consists in exposing the nerve and freeing it from all adhesions.

California and Western Medicine, San Francisco

23: 977-1088 (Aug.) 1925

Focal Infection. F. P. Wisner, San Francisco.—p. 977.
Systemic and Dental Conditions of Fourteen Dental Students. F. P. Wisner, San Francisco.—p. 980.
*Treatment of Poison Oak Dermatitis. H. E. Alderson, San Francisco.—p. 982.
Osteomyeljtis of Skull. H. Fleming, San Francisco.—p. 985.
Artificial Feeding of Newly-Born Infants. W. M. Happ, Los Angeles.—p. 988.
*Prostate and Its Influence on Low-Back Pain. L. P. Player, San Francisco.—p. 993.
*Consideration of Progressive Muscular Dystrophy with Pseudohypertrophy from an Endocrine Standpoint. C. Wright, Los Angeles.—p. 999.
Treatment of Early Carcinoma of Uterus. J. W. Sherrick, Oakland.—p. 1002.

Infectious Jaundice in Utah. J. H. Peck, Tooele, Utah.—p. 1006.
Roentgen-Ray Diagnosis of Diseases of Nasal Accessory Sinuses. R. A. Powers, Palo Alto.—p. 1009.
Extrapleural Thoracoplasty. S. D. Gleeten, Monrovia.—p. 1011.
Allergy and Its Relation to Otolaryngologist. G. Piness and H. Miller, Los Angeles.—p. 1014.
Osteochondritis of Second Metatarsophalangeal Joint. A. Gottlieb, Los Angeles.—p. 1019.
Heart Pain. T. H. Kelly, San Francisco.—p. 1023.
Questionable Diagnostic Methods. J. W. Shuman, Los Angeles.—p. 1027.

Treatment of Poison Oak Dermatitis.—Alderson relates his experience and that of others with the use of poison oak extract in the treatment of poison oak dermatitis. It succeeds in over 80 per cent. of cases. The poison oak toxin is prepared in two strengths, "concentrated" and dilute. In acute cases an intragluteal injection of 1 c.c. of the concentrated toxin is given at once. This is repeated in twenty-four hours if improvement is not shown. Then the dilute solution is given by mouth, starting with 10 drops, giving it three times daily, increasing by 1 drop each dose until 20 drops are reached. Then one teaspoonful is ordered once daily and gradually the dose is increased to two teaspoonfuls daily. In every case an effort to develop immunity is made by having the toxins taken steadily for two or three weeks. For immunization, the dilute solution is prescribed in ascending doses, starting with 10 drops. Patients are advised to start taking the preparation several weeks before going to the country and to continue a week or so after arriving there. As the object of the treatment is to develop increasing tolerance for the poison steady uninterrupted medication is essential. A high degree of tolerance and almost complete immunity may be produced.

Prostatitis Causes Backache.—Player asserts that one of the most important causes of backache in man is prostatitis. Routine examination of the prostate should be made in all male patients complaining of backache, and, if it is found to be involved, proper treatment should be given.

Pituitary Extract in Progressive Muscular Dystrophy.—Wright reports good results from the use of pituitary extract in these cases. While complete cure has not been effected, a large percentage of patients have been benefited to the extent that the paralysis seems nonprogressive and the exacerbations are less frequent and less severe, and in two or three patients there has been a very marked improvement. The mental condition of all patients has been greatly improved. It is Wright's opinion that dysfunction of the pituitary gland is an important etiologic factor in progressive muscular dystrophy.

Indiana State Medical Association Journal, Ft. Wayne

18: 281-310 (Aug.) 1925

How Can Mortality of Prostatectomy be Lowered and End Results be Improved. D. N. Eisendrath, Chicago.—p. 281.
Intestinal Obstruction. M. F. Porter, Fort Wayne.—p. 283.
Luminal in Epilepsy. C. F. Sexauer and D. E. Bell, New Castle.—p. 285.
Cholecystectomy in Gallbladder Disease. L. W. Elston, Fort Wayne.—p. 286.

Johns Hopkins Hospital Bulletin, Baltimore

37: 75-156 (Aug.) 1925

*Pyloric Stenosis of Infants; Sixty Cases. W. C. Davison, Baltimore.—p. 75.
*Biology of Streptococcus Erysipelatis. II. Demonstration of Antigenic Relationships Among Strains of Streptococcus Erysipelatis by Intradermal Protection Tests. K. E. Birkhaug, Baltimore.—p. 85.
Vital and Supravital Studies of Cells of Cerebrospinal Fluid of Meninges in Cats. L. S. Kubie and G. M. Schultz, Baltimore.—p. 91.
*Argentaffine Tumors of Appendix and Small Intestine. W. D. Forbus, Baltimore.—p. 130.

Pyloric Stenosis.—The frequency of pyloric stenosis, as determined by Davison from a study of sixty patients, of whom thirty-two were treated medically and twenty-eight were operated on, was highest among white, male, first-born infants of normal birth weight. The case fatality rate was highest among those who were not constipated, in whom the onset was sudden, who weighed less than 7 pounds at birth and on admission, and who had lost the most weight since birth. No fatalities occurred among infants who were overweight at birth or who had gained in weight between birth and admission to the hospital. The fact that the case fatality rate was slightly higher in the surgical than in the medical group, Davison says, is no reason that all infants with pyloric stenosis should be treated medically, but it is a very good argument against operating on all of these patients as soon as the diagnosis is made, as some surgeons have recommended. By selective therapy, rather than by exclusively surgical or medical treatment, the total case fatality rate can be reduced.

Biology of Streptococcus Erysipelatis.—Intradermal infiltration of the skin of rabbits with immune erysipelas serum twenty-four hours previous to the injection of hemolytic streptococci of erysipelas and nonerysipelas origin, Birkhaug says, offered adequate protection against 93 per cent. of cultures of erysipelatous streptococci. Immune erysipelas serum offered no local passive immunity against the injurious action of cultures of nonerysipelas hemolytic streptococci. Intradermal infiltration with immune scarlatinal serum twenty-four hours previous to the injection of hemolytic streptococci isolated from throat secretions of scarlet fever patients offered local protection against the injurious action of the homologous and heterologous cultures of scarlatinal streptococci. Immune scarlatinal serum offered no local passive immunity against the injurious action of cultures of nonscarlatinal hemolytic streptococci. Intradermal infiltration with normal rabbit serum did not protect against the injurious action of intradermally injected hemolytic streptococci in the doses used. Antigenic relationships demonstrable by agglutination and agglutinin absorption tests were confirmed with regularity by in vivo local passive immunity experiments. Birkhaug says that by this method of local passive immunity it is possible to differentiate a group of hemolytic streptococci causing erysipelas from a group of hemolytic streptococci responsible for scarlet fever, on the one hand, and on the other, from the large series of miscellaneous hemolytic streptococci producing a variety of pyogenic infections.

Argentaffine Tumors of Gastro-Intestinal Tract.—A multiplicity of opinions are on record regarding the nature and the origin of the small carcinoid tumors which occur throughout the gastro-intestinal tract. Forbus suggests that the weight of evidence is in favor of the endocrine origin of these tumors and that they may be rightly called "endocrine tumors," or probably better "argentaffine tumors," and permanently separated from the general group of carcinoma. Six cases of so-called "carcinoma" of the appendix and small intestine are described, and the argentaffine or chromaffine character of the cells of these tumors, originally described by Gosset and Masson, confirmed. The "carcinomas" or "carcinoids" of the appendix and small intestine have their origin in the cells of Kultschitsky and Schmidt of the crypts of Lieberkühn and, therefore, are tumors of the chromaffine system. They may be spoken of as argentaffine tumors, in view of the peculiar ability of the granules of the tumor cells to reduce an ammoniacal solution of silver. The importance of differentiation between the argentaffine tumors and a peculiar form of adenocarcinoma of the appendix and small intestine, which is superficially similar to the argentaffine tumors, is emphasized. Attention is called to the general harmless character of the argentaffine tumors. A review of the literature is given tracing the development of the various opinions regarding the so-called "carcinomas" or "carcinoids" of the gastro-intestinal tract.

Journal of Comparative Psychology, Baltimore

5: 293-343 (Aug.) 1925

Experimental Study in Abstraction in Monkeys. G. Revesz, Amsterdam.—p. 293.

Journal of Infectious Diseases, Chicago

37: 97-192 (Aug.) 1925

*Diphtheria Immunity: Effect of Repeated Injections of Avirulent Diphtheria Bacilli, B. Hofmanni and B. Xerosis in Guinea-Pigs. M. J. Rosenau and G. H. Bailey, Boston.—p. 97.
*Bacterial Factors in Pyorrhea Alveolaris. IV. Micrococcus Gazogenes. I. C. Hall and B. Howitt, Berkeley, Calif.—p. 112.
D'Herelle's Bacteriophage. M. S. Marshall, Lansing, Mich.—p. 126.
*Fecal Flora in Pernicious Anemia. L. M. Moench, M. C. Kahn and J. C. Torrey, New York.—p. 161.
Germicidal Properties of Soap. J. E. Walker, Hot Springs, Ark.—p. 181.

Diphtheria Immunity.—Rosenau and Bailey's studies emphasize the essential difference between the so-called avirulent diphtheria bacilli and the true Klebs-Loeffler organism. Not only did the avirulent strains fail to induce immunity, but their agglutination reactions showed that there is a wide immunologic gap separating them from the diphtheria bacillus. Some of these so-called strains have pathogenic properties. No change in virulence was observed in cultures of avirulent diphtheria bacilli or *B. hofmanni* or *B. xerosis* under observation for eighteen months and transferred for thirty-six generations on Loeffler's blood serum. Experimental confirmation was obtained of the correlation between a positive Schick test and susceptibility, and a negative Schick test and immunity.

Pyorrhea Alveolaris; Micrococcus Gazogenes.—Hall and Howitt emphasize the frequent occurrence in human saliva of a minute, gram-negative, nonsporulating, gas forming, obligate anaerobe. It is identical with the so-called staphylococcus (Veillon) recently recovered by Holman and Krock, which they thought resembled *Bacterium pneumosintes* in filtrability. *M. gazogenes* is a minute diplococcus less than 0.5 micron in length and breadth, gram-negative, nonsporulating, nonmotile, and obligately anaerobic. These properties have caused it to be overlooked in most of the modern work on the mouth flora. It is nonpathogenic directly for rabbits, guinea-pigs, and mice, but it appears to reduce the resistance of rabbits toward other pathogenic microbes.

Fecal Flora in Pernicious Anemia.—A bacteriologic analysis made by Moench, Kahn and Torrey of seventy-two stool specimens from thirty-three cases of pernicious anemia of various durations showed in practically every case an unusually large number of viable organisms, of which *B. coli*, streptococci, *B. welchii* and at times *B. acidophilus* were the most prominent types. These findings indicated that the flora of the large intestine is of an actively growing, nonproteolytic, fermentative type. The most significant feature revealed by these examinations would seem to be the uniformly high counts for *B. coli* and *B. welchii*. Pure cultures of *B. welchii* strains were isolated from twenty-six of these cases. Speculation is offered as to the possible significance of active growth of *B. welchii* at the higher levels of the intestine in the production of the pernicious anemia syndrome in view of its well-known capacity to elaborate a potent hemolysin, an irritating acid and neurotoxic substances.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

26: 1-82 (Aug.) 1925

Slowing and Block in Heart Under Digitalis in Animals. A. R. Cushny and K. Y. Yu, Edinburgh.—p. 1.
Effects of Quinidin on Auricular Irritability and Conduction in Terrapin's Heart. A. D. Hirschfelder and C. Cervenka, Minneapolis. —p. 19.
Studies of Intoxication. B. M. Davidson, Aberdeen, Scotland.
III. Action of Ethylene.—p. 27.
IV. Action of Propylene.—p. 33.
V. Action of Ethyl Chlorid.—p. 37.
VI. Action of Methyl Ether.—p. 43.
*Excretion of Morphin into Stomach. R. A. Hatcher and D. Davis, New York.—p. 49.
*Salicylates. XV. Liberation of Salicyl from and Excretion of Salicyl Salicylate. P. J. Hanzlik and N. E. Presho, San Francisco.—p. 61.
*Id. XVI. Liberation of Salicyl from and Excretion of Methyl Salicylate; Irregular Toxicity of Ester in Man. P. J. Hanzlik and N. E. Presho, San Francisco.—p. 71.

Excretion of Morphin into Stomach.—The commonly accepted view that important amounts of morphin are excreted into the stomach rests solely on the testimony of Alt, which is not supported by any evidence that Hatcher and Davis have been able to discover; on the contrary, a study of the literature shows that careful investigators have uniformly failed to substantiate Alt's contention. Hatcher and Davis have found that only traces of morphin are excreted into the stomach of the cat and dog after the subcutaneous, intramuscular or intravenous injection of amounts varying from 56 mg. (75 mg. of the sulphate) to 982 mg. (1,229 mg. of the sulphate). If gastric lavage is of value in the treatment of morphin poisoning in these animals, this value does not depend on the removal of morphin from the stomach. It is self-evident that the removal of even important amounts of morphin from the stomach could not cause immediate improvement, such as Alt reported.

Study of Salicylates.—The liberation of salicyl from, or decomposition of, salicyl salicylate in vitro was found by Hanzlik and Presho to be relatively slow and poor, being almost negligible in acid buffer mixtures. The liberation was better from a sample of the drug that had stood two years and it was restrained by pancreatine and bile. Accordingly, the claims made for poor gastric liberation of salicylic acid from the drug appear to be justified. However, these factors do not help to account for the considerable absorption of the drug and excretion as ordinary salicylate as indicated by excretion experiments in human subjects. Full therapeutic or clinical "toxic" doses, ranging from 4 to 12 gm. in four subjects, yielded a median total salicyl excretion of 63 per cent. Of the total salicyl excreted, a median of 10 per cent. consisted of the unchanged salicyl salicylate and the remainder, or 90 per cent., of ordinary salicylate. Only about 6 per cent. (median) of the total salicyl salicylate administered was excreted as such. Hence, it appears that the drug is largely converted to salicyl in the tissues. The excretion was uninfluenced by dosage and diuresis; and the duration ranged from ninety-six to 136 hours. The total urinary excretion of salicyl was about the same, namely, a median of 66 per cent. in three normal subjects receiving 1 gm. doses of the drug, independently of the dosage but somewhat dependent on the diuresis. The duration of excretion ranged from forty-two to seventy-two hours.

Liberation of Salicyl from Methyl Salicylate.—The liberation of salicyl from methyl salicylate in "buffer" solutions in vitro Hanzlik and Presho found to be slow and poor, amounting to less than 1 per cent. at the end of six hours under conditions of alkalinity possible in the alimentary tract. It was somewhat higher, less than 2 per cent., at the end of six hours, and less than 3 per cent. at the end of twenty-four hours, in strongly alkaline solution of p_H 8.4. The excretion of total salicylate in six convalescent patients, of whom five received "toxic" doses of the drug, was rather variable and amounted to a median of 50.8 per cent. uninfluenced by dosage of the drug, diuresis and convalescent condition. Of the total salicyl excreted the proportion represented by methyl salicylate studied in five patients was found to be from 0.13 to 0.43 per cent. median 0.21 per cent. and of the amount of ester administered, the total excretion of ester in three patients was from 0.055 to 0.116 per cent. The duration of excretion in six patients was from sixty-two to 124 hours. Three subjects receiving small doses of 1.186 gm. each showed a total salicyl excretion of 50.5 per cent. (median), and the duration was from fifty-one to seventy-four hours. Hence, only a small proportion of methyl salicylate escapes unchanged and it appears that the alkalinity, enzymes and bile of the alimentary tract do not participate much in the considerable liberation of sodium salicylate from methyl salicylate in its passage through the body. The full development of the symptoms of salicylism from methyl salicylate was rather variable in three of the patients, requiring a much longer time than with sodium salicylate, acetylsalicylic acid and salicyl salicylate, suggesting slower and irregular absorption of the ester. This may account for the variability of excretion but not for its incompleteness, since the urines after small and large doses of the drug were collected until excretion was completed, and the duration of excretion was not influenced greatly by the dosage.

Michigan State Medical Society Journal, Grand Rapids

24: 409-468 (Aug.) 1925

South American Observations. J. T. Case, Battle Creek.—p. 409.
*Endemic Goiter, Precancerous Lesion. F. A. Coller, and H. B. Barker, Ann Arbor.—p. 413.
Pathologic Conditions of Hearing Organ; The Deafmute. E. Amberg, Detroit.—p. 416.
*Duodenal Ulcer. F. L. Snyder, Ann Arbor.—p. 419.
Untrained Diabetic and the Family Doctor. D. H. Duffie, Central Lake. —p. 421.
Primary Liver Abscess with Congenital Absence of Gallbladder and Diabetes. F. C. Warnshuis, Grand Rapids.—p. 423.
"Those Good Old Times," as Seen by a Physician. J. G. R. Manwaring, Flint.—p. 425.

Endemic Goiter and Cancer.—Coller and Barker point out that malignancy of the thyroid is much more common in endemic goiter districts than is generally supposed. Adenomatous goiter is said to be the precancerous lesion of the thyroid. Because of the difficulties of early diagnosis of thyroid cancer and the slight chance of cure when the clinical diagnosis is made, adenomatous goiter should be removed when diagnosed after the age of 25.

Duodenal Ulcer.—Fifty cases of chronic duodenal ulcer have been investigated by Snyder in an effort to analyze the symptoms and clinical findings and to determine the frequency of their occurrence. The diagnosis was confirmed at operation in each case. Pain in the epigastrium, almost invariably indicated by the patient's finger placed on the epigastrium, was the outstanding complaint in forty-two cases. In five cases the pain had occurred in the right upper quadrant, in one case it had been entirely confined to the region of the sternum, and in another it had been described as general throughout the abdomen. Vomiting as an immediate complaint was mentioned by 25 per cent. of the patients. Other less frequent complaints were flatulence, dyspepsia and acid eructations; these were outstanding in 20 per cent. In one case with a recent subacute perforation of an ulcer, there had been repeated convulsions, and in another a grave toxic psychosis had developed. Fitting into the classical picture 70 per cent. stated that their pain came from two to four hours after meals; rarely it was described as a hunger pain alone. In 10 per cent. the pain had been either constant or entirely without relation to meals, and in 20 per cent. it had come within fifteen or thirty minutes after meals. Taking sodium bicarbonate had either completely relieved the pain or lessened the discomfort in 75 per cent. but in the remaining 25 per cent. it had had no effect. The ingestion of food had brought relief in more than 50 per cent., while pressure on the epigastrium and induced vomiting relieved the pain in but an occasional case. Vomiting had occurred in 64 per cent. of the cases at some time during the course of the disease. Hematemesis was noted in 33 per cent. and melena in a slightly lesser number of cases. Tenderness in the epigastrium was present in all but three cases. Muscle spasm was noted in slightly more than one half the series, and a mass was palpable in two cases. In four cases there was visible peristalsis and in one case a dilated stomach was described.

Minnesota Medicine, Minneapolis

8: 489-560 (Aug.) 1925

Psychology of Compenation Neurosis. A. Sweeney, St. Paul.—p. 489.
Public Health—A Challenge to Medical Profession. O. E. Locken, Crookston.—p. 492.
*Colonic Function. E. L. Gardner, Minneapolis.—p. 498.
Effect of Environment on Upper Respiratory Tract. H. I. Lillie, Rochester.—p. 512.
*Postoperative Pulmonary Complications. P. G. Boman, Duluth.—p. 517
*Dry Labor. L. M. Randall, Rochester.—p. 525.
Apparatus for Transference of Patients. P. N. Jepson, Rochester.—p. 527.

Dietary Fads.—Gardner is of the opinion that much of the publicity given to certain dietary fads and to encouraging the use of bran and other coarse foods is distinctly harmful to the public and is causing a great deal of semi-invalidism.

Postoperative Pulmonary Complications.—Boman directs attention to the high percentage of postoperative pulmonary complications and emphasizes the importance which pulmonary embolism and infarction play as the real etiologic factors in postoperative pulmonary complications, and that other factors, formerly considered of prime importance, such as anesthesia, infection, preexisting lung disease, old age, debility and chilling of the body, are of a secondary nature.

Dry Labor.—According to Randall premature or early rupture of the bag of waters occurs in about 12.5 per cent. of labors. The average length of labor is not increased because of this complication in itself. The employment of morphin and 2 c.c. of 25 per cent. solution of magnesium sulphate, injected well into the muscle, is of material assistance both in making the patient comfortable and facilitating the relaxation of the cervix. Colonic oil and ether analgesia may also be of value in this connection. Occiput posterior should be watched, since many long dry labors are no doubt due to the failure to recognize this condition.

Missouri State Medical Association Journal, St. Louis

22: 293-344 (Aug.) 1925

*Mastoiditis Cause of Gastro-Intestinal Disturbances in Infants. H. W. Lyman, St. Louis.—p. 293.
Nontuberculous Hip of Early Life. I. Infancy. J. A. Key, St. Louis.—p. 295.
*Pelvic Changes of Quadrupedal Mammals on Assuming Erect Postures. F. Hinchey, St. Louis.—p. 298.
Gynecologic Backache. E. Lissack, Concordia.—p. 303.
Nutrition Problem with Special Reference to Negro Children. M. R. Baynham and B. K. Whipple, Columbia.—p. 305.
Hospitals, Clinics and the Medical Profession. E. Schisler, St. Louis.—p. 310.
*Gigantic Hydronephrosis with Hydro-Ureters, Congenital. E. H. Kessler, St. Louis.—p. 314.

Mastoiditis Cause of Gastro-Intestinal Disturbances.—Lyman cites four cases showing that a close relationship exists in infants between a middle ear infection and disturbances of the gastro-intestinal tract. This type of case is characterized by vomiting, diarrhea, and loss of weight. There is present an inflammatory condition of the middle ear and a temperature ranging from 38 to 40 C. The most painstaking regulation of feeding fails to control the gastro-intestinal symptoms unless the infection in the ear is recognized and relieved.

Pelvic Changes Due to Posture.—Research leads Hinchey to conclude that the upright posture has developed a form of locomotion in man differing greatly from that of other mammals, in that the quadrupedal type depends on a thrusting force proceeding from the posterior limbs, while in man locomotion is effected by balancing the body on the heads of the femurs while endeavoring to broaden the base of support to accommodate the changing center of gravity. This demand for a broad base of support has produced the greater width of thorax and pelvis, which expansion has effected an increase, in the size of the femur neck. Increase in width of the pelvis has been possible by separation of the symphysis of the quadrupedal pelvis, because of the lessened function of the muscles attached to the symphysis demanding a smaller bony attachment and less powerful fixation. All the changes of the pelvis of quadrupeds, where it differs from the pelvis of man, may, perhaps, be regarded as having been demanded by gravity and a new mode of locomotion.

Gigantic Hydronephrosis in Child.—Kessler's patient was 10 years of age. His trouble was of five years' duration but a correct diagnosis was made only after a pyelogram had been made. The boy died from pneumonia while under treatment. A necropsy was made. The ureters originated at the normal location, but they were about 1¼ inches in diameter and the walls approximated those of the bladder in thickness. There was a short constriction near one kidney which measured one-half inch. Both ureters dilated to a funnel shape forming a large kidney pelvis. The kidney substance was about normal in amount for the age of the patient and fetal lobulation persisted. Kidney section showed fibro-adenoma.

New York State Journal of Medicine, New York

25: 855-888 (Aug.) 1925

Primary Carcinoma of Cervix Uteri Treated with Radium. L. K. P. Farrar, New York.—p. 855.
Specialist and General Practitioner. M. Nicoll, Jr., Albany.—p. 859.
Medical Reserve Corps. C. R. Reynolds, Carlisle Barracks, Pa.—p. 864.

Radiology, St. Paul

5: 93-182 (Aug.) 1925

Radiologic Study of Gallbladder. J. C. Friedman, A. A. Strauss and R. A. Arens, Chicago.—p. 93.
Roentgenologic Diagnosis of Disease of Gallbladder. R. D. Carman, Rochester, Minn.—p. 101.
Tetrabromphenolphthalein Injection as an Office Procedure. C. D. Enfield, Louisville.—p. 104.
Differential Diagnosis of Gallstones and Kidney Stones. B. H. Nichols, Cleveland.—p. 107.
Analysis of Bone and Joint Lesions of Known Syphilitic Origin. W. C. Campbell, Memphis, Tenn.—p. 122.
Multiple Myeloma. H. W. Meyerding, Rochester, Minn.—p. 132.
Radioactive Substances and Their Therapeutic Uses and Applications. J. Muir, New York.—p. 147.
Chronic Appendicitis: Bases for Varied Clinical Manifestations. M. I. Bierman, Washington, D. C.—p. 152.
Diaphragmatic Hernia. C. Ford, Chicago.—p. 158.

Isolated Disease of Tarsal Scaphoid (Koehler's Disease): End Results in Treated and Untreated Cases. F. E. Diemer and F. E. Butler, Portland, Ore.—p. 159.
Needle Perforating Duodenum. R. B. Bettman and S. R. Bloom, Chicago.—p. 161.
Gigantic Hydronephrosis with Hydro-Ureters, Congenital. E. H. Kessler, St. Louis.—p. 163.
Case of Congenital Absence of Esophagus. E. B. Knerr, Kansas City, Mo.—p. 165.
Anesthesia Light for Fluoroscopic Room. A. H. Stall, Akron, Ohio.—p. 166.
Case of Infectious Arthritis. N. J. Nessa, Sioux Falls, S. D.—p. 167.
Safeguarding Patient and Technician from Infection in Radiodontia. B. S. Gardner, Rochester, Minn.—p. 169.

Texas State Journal of Medicine, Fort Worth

21: 217-272 (Aug.) 1925

Endoscopic Experiences. C. P. Schenck, Fort Worth.—p. 227.
Septic Phlebitis or Lateral Sinus Thrombosis; Otic Origin; Cases. W. D. Jones, Dallas.—p. 231.
Differential Abdominal Diagnosis. A. L. Blesh, Oklahoma City.—p. 236.
Colostomy for Repair of Hernia Complicating Permanent Colostomies. F. L. Barnes, Houston.—p. 240.
Value of Blood Pressure Determinations in Major Surgery. R. S. Adams, San Antonio.—p. 241.
Fractures About Elbow Joint. B. L. Schoolfield, Dallas.—p. 244.
Conservatism in Obstetrics. G. B. Foscue, Waco.—p. 247.
Use of Glucose and Insulin in Treatment of Obstetric and Postoperative Acidosis. Q. B. Lee, Wichita Falls.—p. 250.
Mechanical Support of Uterus. M. S. Seely, Dallas.—p. 252.
Primary Pigmented Tumors of Lung. W. W. Waite, El Paso.—p. 255.
Symptoms and Differential Diagnosis of Thymus Hyperplasia in Infancy. S. R. Kaliski, San Antonio.—p. 258.
Significance of Pus in Urine. J. L. White, Houston.—p. 260.

United States Naval Medical Bulletin, Washington, D. C.

23: 89-185 (Aug.) 1925

Treatment of Acute Lobar Pneumonia. J. E. Miller, San Diego.—p. 89.
Secondary Neurosyphilis in Navy. E. Ehrenfreund.—p. 96.
Sprue; Case. W. A. Hornaday.—p. 106.
*Treatment for Warts of Foot. J. Markey.—p. 111.
Headaches. H. E. List.—p. 114.
Vertigo. G. C. Main.—p. 120.
Death from Chronic Mercury Poisoning Following Antisyphilitic Treatment. C. D. Middlestadt.—p. 125.
Multiple Sclerosis; Case. L. D. Carson.—p. 130.
Acute Intestinal Obstruction Complicating Chronic Pulmonary Tuberculosis; Case. A. L. Aldrich.—p. 137.
Cavernous Sinus Thrombosis Following Submucous Resection; Case. J. L. Emenhiser.—p. 141.
Recent Progress in Treatment of Syphilis. B. C. Shearer.—p. 144.

Treatment for Warts of Foot.—The form of treatment which Markey has found most effective in all cases was modified from that of various authors. It is local only. The foot is thoroughly cleansed with green soap and water. The area of the ball of the foot surrounding the nodosity is painted with collodion (to protect the normal epidermis from the continued action of drugs). The thickened epidermis is cauterized with fuming nitric acid or strong solution of caustic potash. When a hole which approaches the diameter of the callosity has been eaten away to a depth at which the patient first complains of pain, it is filled with a 15 to 20 per cent. salicylic acid ointment. A felt corn plaster of nearly 3 inches diameter, having an aperture of half an inch, is then taped over the treated area. An additional reservoir of ointment is placed in the opening of the plaster if the foot is to receive only one dressing a day. Each morning the entire dressing is removed. The loose detritus and dead tissue are gently scraped away and the ointment is applied as before. The ordinary case will require only six or seven applications of this type, whereas in obstinate cases the treatment may have to be continued for a fortnight or longer. The lesions are prone to recur if treatment is not persisted in until the last vestige of the papilloma is removed.

Virginia Medical Monthly, Richmond

52: 275-336 (Aug.) 1925

Pathology of Cataract. H. S. Hedges, Charlottesville.—p. 275.
Treatment of Cataract. J. A. White, Richmond.—p. 277.
Observations of Thyroid Patients. J. M. Emmett, Clifton Forge.—p. 280.
Eugenics or Race Deterioration—Which? W. A. Plecker, Richmond.—p. 282.
Divine Plan of Racial Integrity. W. E. Davis, Staunton.—p. 288.
Eugenics in Relation to Insane, Epileptic, Feebleminded and Race Blending. J. S. Dejarnatte, Staunton.—p. 290.
Diphtheria. W. B. McIlwaine, Petersburg.—p. 293.
Relationship Between Diseases of Biliary Tract and Diabetes Mellitus. I. A. Bigger and H. B. Mulholland, University.—p. 294.
Vascular Syndromes in Extremities. T. M. Foley, Washington, D. C.—p. 297.
Clinical Pseudobulbar Paralysis Due to Intracranial Hemorrhage of New-Born. C. Edmond, Clifton Forge.—p. 300.
Treatment for Narcotic Drug Habituation. W. C. Ashworth, Greensboro, N. C.—p. 303.
Malignancy of Lung from Clinical Standpoint. C. L. Harrell, Norfolk.—p. 304.
*Aspiration of Stearate of Zinc Powder in Infancy. C. B. Conklin, Washington, D. C.—p. 309.
Simple Method for Elevating Depressed Anterior Metatarsal Arch. B. H. Kyle, Lynchburg.—p. 310.
*Bilateral Tubal Pregnancy; Case. W. R. Bracey, Richmond.—p. 311.
*Case of Fusospirillary Infection Which Developed During Active Arsphenamin Treatment. J. A. Hillsman and T. L. Driscoll, Richmond.—p. 312.
Noninfectious Leukocytosis. G. G. Howery, Christiansburg.—p. 313.
Diet During Pregnancy. Modification in Prevention of Toxemia. W. I. Prichard, Petersburg.—p. 315.
Case of Giant Cell Bone Tumor. J. B. H. Waring, Blanchester, Ohio.—p. 318.

Aspiration of Zinc Stearate by Child.—Since the type of container that is usually in use did not figure in the case reported by Conklin, it would seem that the organized effort toward the prevention of these accidents should be directed not only toward the modification of the present typical container but also should be directed against careless handling of the loose substance.

Bilateral Tubal Pregnancy.—The gestations in Bracey's case were of about ten weeks' duration. The symptoms had been present for six weeks before operation. The right side probably was the older in that it was ruptured and twice the size of the left. There was no history of having missed a menstrual period. No embryo was found in the clot in the right tube nor were chorionic villi. The left tube was the size of an egg, the blood clot very firm and organized. This was not ruptured. The clot was removed and was conical in shape. The embryo and chorionic villi were absent in this also, presumably having undergone resorption under pressure of the clot and age of the organization.

Fusospirillary Infection During Arsphenamin Treatment.—Hillsman and Driscoll report a case of Vincent's angina developing the day following the third injection of arsphenamin in as many weeks which they say does not speak well for intravenous medication as a cure for the disease. Local cleansing, followed by application of neo-arsphenamin, did not bring about any change for the better in this case, and, further, brings suspicion on arsphenamin as a cure for Vincent's angina, either locally or intravenously. Rapid improvement of this case coincident with the intravenous use of tartar emetic seems to point to the efficacy of this treatment.

West Virginia Medical Journal, Huntington

21: 393-448 (Aug.) 1925

After the Baby Comes. M. H. Maxwell, Keyser.—p. 413.
Importance of Urologic Examination in Differential Diagnosis of Abdominal Conditions. A. E. Goldstein and T. J. McBee, Baltimore.—p. 417.
Roentgen-Ray as Aid in Diagnosis of Pulmonary Tuberculosis. A. C. Lambert, Charleston.—p. 426.
Our Duty to Public and Mistakes We Can Make. C. A. Ray, Charleston.—p. 431.

Wisconsin Medical Journal, Milwaukee

24: 115-272 (Aug.) 1925

Importance of Early Diagnosis of Esophageal Lesions. J. M. Waugh, Cleveland, Ohio.—p. 115.
*Effect of Tryparsamide on Optic Tract. E. E. Neff, Madison.—p. 120.
Complications of Suppurative Inflammation of Middle Ear. R. C. Smith, Superior.—p. 125.
Conservative Treatment of Chronic Suppurative Otitis Media. J. E. Mulsow, Milwaukee.—p. 130.
Indications for Radical Mastoid Operation. W. E. Grove, Milwaukee.—p. 132.

Effect of Tryparsamide on Eyes.—Neff presents the results obtained in a series of fifteen cases. Four patients complained of subjective eye symptoms. Immediately on the development of eye symptoms the treatment was discontinued and was only resumed when these had disappeared, or when ophthalmologic examinations justified continuation. On resumption of treatment there was never a recurrence of visual disturbance.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Surgery, Bristol

8: 1-200 (July) 1925

Charcot's Joints. XVII. D. Power.—p. 1.
*Tumors of Testicle. Teratoid Group. F. G. Bell.—p. 7.
*After-Results of Operations for Malignant Diseases of Breast. A. C. Perry.—p. 39.
Urethral Pouches. G. P. B. Huddy.—p. 50.
Technic of Extrapleural Thoracoplasty. H. M. Davies.—p. 58.
Pyelography in Polycystic Disease of Kidneys. W. M. Carrick.—p. 75.
Etiology and Treatment of Cystitis. H. W. B. Cairns.—p. 78.
Riedel's Chronic Thyroiditis. A. F. B. Shaw and R. P. Smith.—p. 93.
*Aneurysm of Aorta Treated by Wiring. G. H. Colt, C. J. Marshall and C. G. Wakeley.—p. 109.
Extravasation of Bile. Z. Cope.—p. 120.
*Carcinoma of Vermiform Appendix. E. H. Shaw.—p. 130.
Eleven Cases of Vesical Diverticula. R. O. Ward.—p. 144.
Polypi in Bowel Causing Intussusception. W. E. M. Wardill.—p. 158.
*Interscapulothoracic Amputation for Carcinoma of Breast. C. Wallace.—p. 163.
Two Cases of Polypus of Stomach. T. B. Mouat.—p. 165.
Case of Von Recklinghausen's Osteitis Fibrosa. A. R. Short.—p. 170.
Ossifying Chondroma of Rib Mistaken for Sarcoma. C. P. G. Wakeley.—p. 175.
*Renal Colic as Late Complication of Nephrectomy. W. H. B. Cairns.—p. 178.
Cystadenoma of Pancreas: Complete Removal. S. Pringle.—p. 180.
Ectopic Ovary. A. Evans and S. Cade.—p. 182.
Case of Heart (Auricle) Suture. H. Drummond.—p. 184.
Snaring of Caput Ceci and Appendix by an Omental Band. H. M. Rigby.—p. 187.
*Cases of Foreign Bodies in Gastro-Intestinal Tract. W. Adams.—p. 189.
Sarcoma of Renal Pelvis, Associated with Hydronephrosis. F. G. Ralphs.—p. 190.

Tumors of Testis.—Bell holds that the majority of testicular tumors belong to the teratoid category. The relative representation of the various blastodermic derivatives varies greatly in different specimens. Overgrowth of one blastodermic element with partial or total (?) suppression of the others occurs frequently. Hypoblastic overgrowth is most common, mesoblastic next in frequency, and epiblastic least common. Such overgrowth may be simple or malignant, and produces many variations from the typical three-layered teratoma. Teratoma testis is potentially malignant to a high degree.

Results of Operations for Breast Cancer.—Of 653 cases analyzed by Perry, eleven patients died in hospital, thus giving a mortality of 1.7 per cent. Of these, one died from infection, one under the anesthetic, one from heart failure, and the remainder from pulmonary complications and pulmonary embolism. The scirrhus carcinoma group formed 58 per cent. of the whole series. Of these, 37.5 per cent. lived more than three years, with an average of 5.9 years; 10.4 per cent. lived more than seven years, with an average of 8.7 years; carcinoma simplex formed 14.2 per cent. of the whole series, and of these, 32 per cent. lived more than three years, with an average of 7.8 years; 16.2 per cent. lived more than seven years, with an average of 11.2 years; medullary carcinoma formed 8.8 per cent. of the whole series, and of these 38 per cent. lived more than three years, with an average of seven years, and 21 per cent. lived more than seven years, with an average of nine years. There is definite evidence of recurrence after operation in 35 per cent. of the cases examined.

Aneurysm of Aorta Treated by Wiring.—In two of the cases reported by Holt et al. the abdominal aorta was involved. In the third the ascending aorta was the seat of the aneurysm. Although these patients died seven days, twelve days and eight and one-half months, respectively, after operation, postmortem study showed that this method of treatment is well worthy of trial.

Carcinoma of Appendix.—Eleven cases of carcinoma of the vermiform appendix are reported by Shaw. Five patients had reached or passed the age of 50 years. Of the remainder, two were between 30 and 40, two in the twenties, and one patient was only 19 years of age. The youngest of all, a girl of 11, presents two exceptional features—the growth occurred in the body of the appendix and consisted of two nodules. It is worth noting in connection with the last two cases that although carcinoma occurring in young people usually grows rapidly and soon destroys life, these two patients were alive and well two years after the growths were removed.

Amputation in Carcinoma of Breast.—Wallace describes an interscapulothoracic amputation which was performed in two cases of advanced carcinoma of the breast. The shock was no greater than that encountered in other less extensive operations.

Renal Colic Complicating Nephrectomy.—Cairns cites a case which presented the unusual feature of a renal colic occurring eleven years after removal of the corresponding kidney. The cause of this colic and of the other symptoms, which were equally baffling, was discovered by mere chance. At the nephrectomy operation the distal cut end of the dilated ureter was evidently closed by a silk ligature. A slight degree of infection persisted around the fragment of silk, causing from time to time a slight aching pain in the left loin. Twelve years after it had been placed in position the silk worked loose and was expelled down the still patent ureter to the accompaniment of a sharp attack of renal colic. In the bladder it gave rise to a temporary retention of urine, which could easily be relieved by catheter. Finally, the ligature was discharged at the external meatus of the urethra. The patient had no more trouble afterward. The case emphasizes the point that nonabsorbent material should not be used in nephrectomy for ligature of the ureter, particularly when the ureter is dilated.

Intestinal Tract Foreign Body.—In one of the cases reported by Adams a cast of vegetable material simulated carcinoma of the stomach. The second case was one of Richter's hernia-scrotal abscess which contained fruit stones.

British Medical Journal, London

2: 185-240 (Aug. 1) 1925

*Experimental Polyuria. E. Sharpey-Schafer.—p. 185.
*Presence Post-Mortem of Nitric Oxid-Hemoglobin. H. A. L. Banham, J. S. Haldane and T. Savage.—p. 187.
*Filter Passing Viruses and Cancer. W. E. Gye.—p. 189.
Apparatus for Photographing Ultramicroscopic Viruses. J. E. Barnard.—p. 192.
Viruses of Vaccinia and Variola. M. H. Gordon.—p. 192.
Viruses of Common Cold and Herpes. J. E. McCartney.—p. 194.

Experimental Polyuria.—Sharpey-Schafer says that the fact that polyuria is produced by lesions of the base of the brain in the perihypophyseal region, even when the kidneys are completely denervated, is a clear indication that the cause of the polyuria is humoral rather than nervous. This and the fact that it does not make its appearance until the next day or the day after are suggestive of an indirect action through the pituitary rather than of a direct effect from the brain lesion, which, as in the case of Bernard's puncture of the fourth ventricle, would produce its effects immediately.

Nitric Oxid Hemoglobin.—The case reported by Banham, Haldane and Savage was one in which there is every reason for believing that postmortem appearances which simulated very closely those of carbon monoxid poisoning were due to the formation of nitric oxid hemoglobin after death.

Filter Passing Viruses and Cancer.—Gye states that vaccinia and variola viruses are both particulate and largely held up by the Berkefeld filter. Their presence and abundance can be measured, within limits, by the quantitative virulence tests, also by quantitative serologic methods—that is, complement-fixing and agglutination tests—with antivaccinia serum. Active immunity can be produced to vaccinia with either attenuated or killed virus, provided the dose is sufficient. A fair degree of passive immunity is possible. The capacity of vaccinia to excite acute nasal catarrh links up this virus with that of influenza. Flocculi deposited from suspensions of vaccinia or variola virus by specific agglutination are composed, under dark-background microscope, of spheroidal bodies closely resembling Barnard's found in cancer cultures. Apparently similar bodies, however, have been found in flocculi from precipitin action—that is, in flocculi thrown down from serum of man or of horse when these are brought in contact with homologous antiserum prepared from the rabbit. The resemblance, however, may be only superficial.

Japan Medical World, Tokyo

7: 173-200 (July 15) 1925

*Experimental Study on Hyperfunction of Parathyroid Glands by Transplantation into Homologous Animals. K. Kurokawa.—p. 173.
*Coagulation Time of Circulating Blood During Menstruation Period. T. Hosaka.—p. 179.
Experimental Xerophthalmia. T. Okamoto.—p. 180.

Function of Parathyroid Glands.—Kurokawa transplanted parathyroid glands of rats into the abdominal muscles of normal healthy rats, and kept the animals under observation for ten months. The transplanted parathyroid glands showed histologically perfectly normal pictures and did not cause any reaction in the surrounding tissues. There was no regressive degeneration. Consequently, it was possible to produce hyperfunction of parathyroid glands by transplantation, heretofore regarded as experimentally impossible. The growth of the animal with hyperfunction of the parathyroid was very much disturbed and increase of the body weight was very slow. Some of the animals died from malnutrition. Various viscera showed atrophic changes. But atrophic changes were not seen in the parathyroids, the islands of Langerhans, the cortex of the suprarenals or the pineal body. It is concluded that the changes caused by hyperfunctioning of parathyroids are due to intoxication phenomena by metabolic disturbances. The thyroid has an antagonistic action against hyperfunction of the parathyroids. The hyperfunction of the parathyroids caused marked disturbance of growth of bone. Bones showed atrophy and the epiphyseal line was narrow and irregular. But there was no increase of osteoid tissue or cartilaginous cells as seen in rachitis. Consequently, Kurokawa does not agree with the view that rachitis and osteomalacia are caused by hyperfunction of parathyroid glands.

Coagulation Time of Blood During Menstruation.—Testing the coagulability of the blood in six women during the menstrual period Hosaka found retardation of coagulation time only rarely. This variation he thinks may be due to changes in the internal secretion of ovaries.

Journal of Oriental Medicine, Dairen, South Manchuria

3: 53-64 (May) 1925

*Urease Content of Seed of Cucurbitaceae. S. Imai.—p. 53.
Racial Hygiene, Especially Among Japanese in South Manchuria. K. Nakadate.—p. 57.
Significance of Pigment Cells of Frogs. R. Tsukamoto.—p. 60.
*Insulin Treatment of Exophthalmic Goiter. H. Senga.—p. 62.

Urease in Melons, Beans and Pumpkins.—Imia found urease in the seeds of watermelon, soya beans, pumpkins and various other species of melons.

Insulin Treatment of Exophthalmic Goiter.—Three cases of exophthalmic goiter were treated with insulin by Senga with good results. Remarkable improvement was observed; the basal metabolic rate diminished; the body weight increased and the general nervousness and tremor of the patients subsided. Although the lessening of struma and exophthalmos was but slight, the general feeling of the patient appeared to be much better in every way.

Lancet, London

2: 313-362 (Aug. 15) 1925

Fractures of Pelvis and Lower Extremity. W. I. de C. Wheeler.—p. 313.
Dosage of Ultraviolet Rays in Artificial Sun Treatment. A. Eidinow.—p. 317.
Treatment of Infantile Paralysis. G. M. Levick.—p. 323.
*Rheumatic Infection in Childhood. V. Coates and R. E. Thomas.—p. 326.

Rheumatic Infection in Childhood.—Forty-four cases of rheumatic infection in children have been investigated by Coates and Thomas. The opinions reached are that rheumatic infection in elementary school children is not a poverty disease. It is extremely prevalent among such children. The potency of heredity and low-lying locality is emphasized. Subcutaneous nodules have been demonstrated in thirty-five out of forty-four cases (79.5 per cent.), and are significant of an active rheumatic focus, as shown by their association with symptoms and their absence in three cases of stationary mechanical carditis formerly rheumatic. Thus, their presence not only crystallizes an otherwise nebulous diagnosis, but indicates the necessity of continuation of treatment, particularly in nervous children and in those with unsatisfactory cardiac sounds.

2: 363-414 (Aug. 22) 1925

Fractures of Pelvis and Lower Extremity. W. I. de Courcy Wheeler. II.—p. 363.
Tissue Reactions to Ultraviolet Radiations. P. R. Peacock.—p. 369.
*Spirochetal Jaundice. E. Hindle and H. C. Brown.—p. 372.
*Chaulmoogra Treatment of Leprosy. I. Kerr.—p. 373.
Cystinuria in Children; Two Cases. J. F. H. Stallman.—p. 375.

Spirochetal Jaundice in Great Britain.—Hindle and Brown report two cases of this nature, in one of which they were able to demonstrate the presence of the very characteristic leptospira in the patient's urine. These cases are particularly interesting, inasmuch as they were undoubtedly linked up with a small outbreak in a school at Midlands.

Chaulmoogra Treatment of Leprosy.—Out of 180 patients treated with hydnocarpus ester during 1923 and 1924 at the Leper Hospital at Dichpalli, Hyderabad, Kerr says, 17 per cent. were symptom free; 45 per cent. are very much improved, most of them likely to become symptom-free; 35 per cent. are improved; 3 per cent. are worse or dead. Of infective cases, 63 per cent. have become noninfective.

Medical Journal of Australia, Sydney

2: 63-98 (July 18) 1925

Chronic Appendicitis or What? F. N. G. Starr.—p. 63.
Acute Septic Osteomyelitis. D. E. Robertson.—p. 66.
Causes of Chronic Pain in Back and Buttocks. G. S. Strathy.—p. 68.
Diet and Insulin in Treatment of Diabetes. W. R. Campbell.—p. 74.
Treatment of Acidosis and Coma in Diabetes Mellitus. D. Graham.—p. 78.
Other Complications in Diabetes Mellitus. A. A. Fletcher.—p. 80.
Management of Gastric and Duodenal Ulcers. R. R. Graham.—p. 82.
Transport and Deposition of Calcium Salts in Body. J. C. Watt.—p. 85.
Anesthesia and Anesthetics. V. E. Henderson.—p. 88.

2: 99-126 (July 25) 1925

Endocrinology and Modern Medicine. C. H. Kellaway.—p. 99.
*Method for Determination of Death by Drowning. A. Palmer and W. M. Doherty.—p. 103.
Ideals of Obstetric Work. J. W. D. Hooper.—p. 104.
Diathermy. J. F. Nelly.—p. 105.
Death from Electric Shock. B. J. M. Harrison.—p. 106.
Toxicology of Eucalyptus Oil. J. MacPherson.—p. 108.
Cutaneous Cholesterol Deposits. A. H. Tebbutt and F. S. Hansman.—p. 110.

2: 127-152 (Aug. 1) 1925

Immunity. P. MacCallum.—p. 127.
Fractures of Forearm; Nonoperative Treatment. L. G. Teece.—p. 132.
Treatment of Compound Fractures of Forearm. A. Aspinall.—p. 135.
Urethral Hernia of Bladder. J. W. Dansey.—p. 137.
Rib Implant for Depressed Bridge of Nose.—p. 137.

Increase of Blood Chlorids in Death from Drowning.—Of six cases of drowning in sea water, seen by Palmer and Doherty, five showed a definite increase of chlorids in the blood of the left side ranging from 25 to 23. In the sixth case, it was present in equal amounts on the two sides. It is suggested that a patent foramen ovale was missed at the necropsy.

South African Medical Record, Cape Town

23: 293-325 (July 25) 1925

Bench, Bar and Medicine. J. C. Dove-Wilson.—p. 300.
Focal Infection. R. L. Girdwood.—p. 303.
Fetal Death. R. L. Impey.—p. 309.
Case of Paget's Disease. L. I. Braun.—p. 314.
*Cancer Among Natives of South Africa. N. Macvicar.—p. 315.
Case of Whitman's Astrangalectomy. R. A. Ross.—p. 316.

Cancer Among South African Natives.—Among 10,000 inpatients coming from South African natives, Macvicar found ninety-seven cases of carcinoma, thirty cases of sarcoma, fourteen cases of internal growths—brain, chest, abdomen—of obscure nature but probably malignant. Cancer of the mouth seems to be rather common. Macvicar attributes it to the irritation of the things many native men and women carry in their mouths, especially plugs of coarse tobacco, possibly also to the long wooden pipes they use. Cancer of the liver is common in comparatively young men, and even boys. It seems to be due to schistosome infection. Cancer of the breast is rare. Macvicar is inclined to attribute this immunity to the fact that in their natural state Bantu women do not wear corsets, and rarely do so even when adopting other European clothing. The few who did wear the high ribbed corset of the last generation seem to have suffered as commonly as Europeans from cancer.

Annales des Maladies Vénériennes, Paris

20: 401-480 (June) 1925

*The Targowla Test in Syphilis. R. Bernard and G. Ruelle.—p. 401.
*Autovaccination in Gonorrhea. B. Valverde.—p. 427.
Syphilitic Chancre in Supraspinous Fossa. L. Danel.—p. 442.

The Targowla Reaction.—Bernard and Ruelle's tests of the cerebrospinal fluid in 200 cases showed the Targowla paregoric reaction to be dependable in all the different stages of syphilis (errors not over 7 per cent.). The reaction appeared to be more accurate than the Wassermann test in neurosyphilis, with the exception of tabes and general paralysis. The test was negative after specific treatment. As described in THE JOURNAL, Feb. 10, 1923, p. 435, Targowla found that camphorated tincture of opium forms a colloidal suspension with cerebrospinal fluid. Precipitation occurs when the fluid is pathologic. He adds to 15 drops of the fluid to be examined, 5 drops of water and 15 drops of the paregoric elixir.

Autovaccination with Culture of Semen in Chronic Gonorrhea.—Twelve personal observations and cases on record have convinced Valverde that autovaccination with a semen culture can be only an adjuvant in treatment of chronic gonorrhea. The autovaccine seemed to exert a greater effect on lesions of the prostate and seminal vesicles than the usual vaccine. The urine cleared up more rapidly, but the general reaction and the irritation of the urethra were more pronounced than with ordinary vaccines.

Archives des Maladies de l'App. Digestif, Paris

15: 409-512 (May) 1925

Growths and Tumors of the Anal Passage. R. Bensaude et al.—p. 409.
*Grave Neurosis of the Solar Plexus. Cornioley.—p. 443.

Acute Neurosis of the Solar Plexus.—In the two cases reported by Cornioley, an exploratory laparotomy on the presumptive diagnosis of perforation of a gastric ulcer revealed the stomach and peritoneum apparently normal. The patients were men, and both had been having vague stomach disturbances for a few months or years. They have had no return of the pains since the exploratory laparotomy. In a third similar case, in a young woman, the attacks of intense pain returned after the exploratory laporatomy, and fatal ileus developed later from adhesions.

Archives des Maladies du Cœur, etc., Paris

18: 353-432 (June) 1925

Physiology of Cardiac Rhythm. H. Vaquez and E. Donzelot.—p. 353.
Apparatus for Stabilization of Electrocardiograph. A. Alvarez Moulia and A. di Lucci.—p. 371.
Arrhythmia in Exophthalmic Goiter. G. Bickel and E. Frommel.—p. 378.

18: 433-496 (July) 1925

Radioscopy in Early Diagnosis of Dilatation of Heart. E. Bordet.—p. 433.
Interposed Tissues in Conduction of Heart Impulse. Géraudel.—p. 445.
Experimental Arrhythmias. G. Bickel and E. Frommel.—p. 451.
*Motor Reflex Sign of Angina Pectoris. Hatzieganu and Telia.—p. 466.

Muscular Contractions in Upper Extremity as Early Symptom of Angina Pectoris.—Reporting five observations, Hatzieganu and Telia call attention to a muscular contraction phenomenon which may appear as the first symptom of angina pectoris. It consists in a motor reflex of the forearm, transient contractions of flexor muscles innervated by certain branches of the median and ulnar nerves. In a case of aortitis with grave angina pectoris and Cheyne-Stokes respiration, the muscular contractions were of clonic form, in the others, of tonic form, lasting from five to ten minutes. The clonic contractions were noted in angina pectoris attended with heart insufficiency, the tonic in cases with rare paroxysms, and without evident signs of heart weakness. In four patients the contractions occurred in the left arm; in one patient in both arms during grave paroxysms and in either arm during a slight attack. Since the sensory fibers from the heart and aorta reach the segments of the spinal cord controlling the arms, irritation of the motor cells of the anterior horns may induce contractions of the arm muscles, especially of the hand, as well as the contractions of the intercostal muscles. Obviously, the contractions in the arm are caused by the same mechanism as the precordial oppression, and they may have the same import from the diagnostic standpoint.

Bulletins de la Société Médicale des Hôpitaux, Paris

49: 1145-1215 (July 24) 1925

Thrombosis in Myeloid Leukemia. C. Aubertin and G. Rimé.—p. 1146.
Subacute Pulmonary Gangrene. H. Bourges.—p. 1151.
Gangrene of Both Feet; Recovery Under Elevation of Feet and Serotherapy. Achard and Bloch.—p. 1156.
Pneumothorax Treatment in Lung Gangrene. Ameuille and Teisseire.—p. 1159.
Death Following Injection of Arsenical. D. Paulian.—p. 1164.
Case of Uremic Nephritis. V. Cordier and P. Delore.—p. 1165.
*"Dry" Chlorid Retention. L. Blum and van Caulaert.—p. 1175.
*Stain Function Test of the Liver. Merklen et al.—p. 1180.
Recovery Under Tetanus Antiserum. Maurin.—p. 1185.
Diagnosis of Cervical Ribs. A. Ricaldoni and Pla.—p. 1187.
*Epidemic Encephalitis. Denéchau and Barbary.—p. 1199.
Duodenum Compressed by Mesenteric Artery. Brin and Denéchau.—p. 1202.
Convallamarin in Treatment of the Heart. Laubry and Routier.—p. 1207.
Complications of Insulin Treatment. Achard and Bloch.—p. 1210.

Mechanism of "Dry" Chlorid Retention.—Blum and van Caulaert explain that the primary factor in the retention is an anatomic lesion of the kidneys, inducing impermeability for chlorin. The consequent retention of chlorin impairs the renal functioning still further, a vicious circle enhancing the impermeability. The condition is accompanied by exaggeration of the passage of sodium from the blood into the tissues, where it accumulates. The elimination of sodium with the urine is augmented, since the pathologic kidney is unable to retain it. The blood thus loses its sodium and becomes more concentrated while the tissues become dehydrated. Retention of chlorin is thus the main factor in "dry" retention, while retention of sodium is the main factor in dropsical retention.

Rosenthal's Liver Function Test.—Estimation of the proportion of phenoltetrachlorphthalein left in the blood after a given interval, in fifteen patients, showed that fixation of the dye is less pronounced with cancer than with cirrhosis. In cases with an enlarged liver, retention of the dye suggests cancer rather than hepatitis or cirrhosis. The retention does not correspond to changes of the liver cells, as detected on clinical examination. The fixation of the dye probably occurs in the Kupffer cells, and as cancer usually develops in them, the dye is not retained by the pathologic Kupffer cells. In cirrhosis, the Kupffer cells are comparatively intact, and fixation of the dye occurs. While certain lesions of the parenchyma cells cause retention of bile, the passage of the dye into the biliary tract may proceed unhampered. Thus with Rosenthal's reverse stain method, it is possible to compare the reaction of the organism to its own bile as well as to the dye.

Salicylate Treatment of Epidemic Encephalitis.—The treatment was started by Denéchau and Barbary on the tenth day of the disease in a woman, aged 50. The onset had been stormy, with fever, profound somnolence and mild Kernig sign, but no ocular or muscular symptoms. A 4.7 per cent. solution of glucose was used as a vehicle for sodium salicylate. Two daily injections of 0.5 gm. of sodium salicylate into the median veins and one of 1 gm. intramuscularly were given for twenty-two days. The results were remarkable and prompt. The recovery persists for the two months to date.

Comptes Rendus de la Société de Biologie, Paris

93: 217-300 (July 3) 1925. Partial Index

Mobility of Pelvis Joints in Childbirth. Vallois and Thomas.—p. 221.
Oculocardiac Reflex in Domestic Animals. Arloing et al.—p. 223.
Tubercle Bacilli Cultures on Potato. Arloing and Malartre.—p. 225.
Filtrable Neurotropic Viruses. Salimbeni et al.—p. 227.
*Venous Tension with Varices. Villaret et al.—p. 230.
Pleural Effusion with Pneumothorax. Durand and Charchanski.—p. 231.
Alleged Action of Cadmium on Syphilis not Confirmed. Levaditi et al.—p. 233.
*Test Reaction in Gonorrheal Rheumatism. F. Bezançon et al.—p. 235.
*Action of Bile on Chronaxia. Lyon-Caen.—p. 237.
Ion Concentration of Bile and Pancreatic Juice. Carnot and Gruzewska.—p. 240.
*Histamin Test for Gastric Secretion. Carnot and Libert.—p. 242.
*Lesions from Virus of Multiple Sclerosis. I. Minea.—p. 245.
*Epinephrin and Staphylococcus Infection. V. Papilian.—p. 248.
*Antitoxin-Anatoxin in Diphtheria Infection. C. E. Pico.—p. 261.
*Internal Massage of the Heart. Fontès and Thivolle.—p. 267.
*Action of Light on Nitrogen Metabolism. Fontès and Yovanovitch.—p. 269.

*Chloroform in Nervous System. Nicloux and Yovanovitch.—p. 272.
*Survival of Eggs After Irradiation. Ancel and Vintemberger.—p. 281.
Mechanism of Acidosis. Blum and Delaville.—p. 289.
The Blood in Diabetic Acidosis. L. Blum et al.—p. 292.

Diagnostic Value of Venous Tension in Varices.—Villaret and his co-workers measured the venous tension of reclining subjects. The tension was higher in the legs than in the arms in eight healthy persons. The difference appeared still greater in twelve cases of symptomatic varices, with compression of the inferior vena cava, as in pregnancy, fibroma of the uterus, cancer of the liver, or hypertrophic cirrhosis with ascites. In twenty-two cases of essential varices, without compression of the vena cava, the venous tension was below normal. Determination of compression of the vena cava may be important in differential diagnosis. Drugs that act on the veins, such as hamamelis and hydrastis, also organotherapy, favorably modified the venous tension with varices.

Gonococcus Reaction in Differentiation of Gonorrheal Rheumatism.—Bezançon, Weil and Rubinstein used the antigen from an emulsion of at least six strains of the gonococcus. In fourteen subjects with rheumatism of non-gonorrheal nature, the reaction was always negative; in twenty-four with gonorrheal rheumatism the reaction was positive in 87.5 per cent. The reaction was unquestionably negative in two patients with meningococcus arthritis. In a woman with inflamed metatarsophalangeal joint of the big toe, the reaction revealed the gonococcal origin of the affection, treated previously for gout. In three men with arthritis the reaction was positive, although the intervals since the gonorrhea had been five, seven and twenty-four years. The urethral discharge, as well as cultivation of the sperm were negative. The results from bacteriotherapy were remarkable in one case of recurring shifting arthritis with large prostate but no urethral discharge for many years.

Effect of Bile on Neuromuscular Excitability.—Experimental findings in frogs and snails proved to Lyon-Caen that the action of bile and biliary salts is similar to that of curare poison. They retard muscle chronaxia, while the nerve chronaxia remains unchanged.

Histamin Test of Gastric Secreting Capacity.—Carnot and Libert point out that the histamin test stimulation of the gastric secretion has the advantage over test meals, that the gastric juice is free from food admixture and there is no fixation of the acid and ferment by ingested protein. They injected subcutaneously 1 c.c. of a 0.1 per cent. solution of histamin and examined the stomach content forty-five minutes afterward. The histamin test, applied in patients with ulcer of the stomach, cholelithiasis, jaundice and cancer, showed that with this method the determination of hyperchlorhydria and hypochlorhydria is easier and more exact than with the usual test-meal methods.

Lesions of Peripheral Nerves from Virus of Multiple Sclerosis.—Minea injected an emulsion of the spinal cord from a multiple sclerosis cadaver in the sciatic nerve of rabbits. The microscopic findings indicated the affinity of the virus for the myelin of the nerve fibers. There were also evidences of a toxic periaxial neuritis. Obviously, the findings were analogous to those in the acute and early stage of multiple sclerosis.

Sympathicotonic Substances Promote Infection.—Dogs were inoculated with staphylococci, with or without preliminary injection of epinephrin. In the animals under the influence of epinephrin, there was swelling the second day, and an abscess the third day. These phenomena were absent in the control dogs. Other series of dogs were injected with atropin. An abscess appeared in three out of six; in the control dogs in one out of six. Evidently the excitation of the sympathetic system from the epinephrin favored the inducing of staphylococcus infection. The action of atropin was less pronounced.

Action of Diphtheria Antitoxin-Anatoxin on Experimental Diphtheria.—Pico's experiments on rabbits and guinea-pigs were made with subcutaneous injections, simultaneously in different regions, of a lethal dose of living diphtheria bacilli, and injection of from 2 to 3 c.c. of antitoxin mixed with anatoxin, 2:1. Most of the animals thus treated survived, while the controls all died. An active immunity was conferred by the antitoxin-anatoxin compound, while no immunity could be obtained with anatoxin alone, nor from mixture with normal serum, free from anatoxin. The induced immunity was effective against a dose of bacilli which otherwise killed the animals within four or five days. The method may be used as a prophylactic measure during an epidemic, since the immunization with it is rapid.

"Endomassage" of the Heart from Intra-Arterial Injection.—Fontès and Thivolle report that exsanguinated dogs were resuscitated by injecting into the central end of the artery (femoral or carotid) an isotonic solution or a mixture of isotonic and isoviscous solutions. The amount of the solution was the same, or larger than the blood withdrawn. The heart beat and respiration reappeared in a few seconds. The primary blood volume was soon regained. The rapid occurrence of heart contraction is ascribed to the stimulation of the aortic valves, transmitted to the myocardium, from the shock induced by the injection. The stimulating action is considered a kind of internal massage of the heart. The method might be applied in acute anemia, using an accessible artery such as the radial.

Rôle of Light in Nitrogen Metabolism.—Fontès and Yovanovitch found that the decrease of total urinary elimination of nitrogen during sleep is less in a light than in a dark room. Evidently the absence of light is chiefly responsible for the diminished nitrogen metabolism in sleep.

The Chloroform Content of the Nervous System in Anesthesia.—Nicloux and Yovanovitch observed that in the beginning of administration of chloroform, before the threshold of anesthesia has been reached, more chloroform is fixed in the brain than in the surface nerves. Gradually the peripheral nerves fix more of the drug; when the anesthesia is complete they contain several times more chloroform than the central nervous system. Under chloroform associated with morphin, the content of chloroform in the nervous system is less. The sympathetic ganglions retain as much chloroform as the vagus, while the brachial and the sciatic retain considerably less.

Survival of Frog's Eggs After Irradiation.—Ancel and Vintemberger's research revealed that the survival of an egg, exposed to a lethal dose of roentgen rays, is prolonged if its development is retarded. The gravity of the lesions depends on the dose of the rays and on the susceptibility of the egg to the irradiation.

Journal d'Urologie, Paris

19: 473-564 (June) 1925

*Diverticula of the Bladder. G. Gayet and J. Cibert.—p. 473.
Pyuria with Prostatic Obstruction. H. Blanc.—p. 506.
Syphilis of the Bladder in a Woman, with Fistula into the Rectum. H. Blanc and M. Negro.—p. 513.
A Pseudocystic Cancer of the Prostate. H. Blanc.—p. 521.
Treatment of Genital Tuberculosis in Men. G. Marion.—p. 524.

Twenty-Two Cases of Diverticula of the Bladder.—Gayet and Cibert found that in seventeen of twenty-two patients the diverticula of the bladder had been induced by urinary obstruction. In five cases the diverticulum was congenital. All the patients were men, aged 33 to 76. The authors reiterate that a diverticulum favors the development of pyuria and calculi, as well as of cancer. The only rational treatment is a timely operation. Six died of those given palliative treatment and the others still have pyuria, while six were completely cured by more radical measures; three died. They reproduce a misleading roentgenogram from a case of multiple false diverticula, the result of long dysuria and straining.

Médecine, Paris

6: 669-744 (June) 1925

Electrotherapy and Radiology in 1924. A. Zimmern.—p. 669.
Ultraviolet Ray Treatment. T. Nogier.—p. 687.
Light in Treatment of Rickets. E. Lesné and L. de Gennes.—p. 690.
*Electricity in Treatment of Constipation. P. Lamarque.—p. 699.
Radiotherapy of Asthma. Raulot-La Pointe.—p. 701.
Radiologic Study of Deglutition. J. R. Busy.—p. 713.
Gymnastics and Plaster Jacket in Scoliosis. C. Roederer.—p. 717.
Aix-les-Bains Courses for Chronic Lumbago and Sciatica. J. Forestier.—p. 723.
Physical Training and Sports. P. Chailley-Bert.—p. 731.

Electrotherapy of Constipation from Atony—Lamarque has noted that constipation from atony is not only more frequent than the spastic constipation, but occurs in young persons as well as in the elderly. He believes that the electric current may be the best means to stimulate to normal functioning the smooth muscle fibers and the intestinal glands. A rectangular electrode is applied to the lumbar region and an elliptical to the abdomen of the recumbent patient, the pelvis raised a little. A slowly interrupted faradic current is followed by a reversed galvanic current. The first application of fifteen minutes' duration is lengthened daily to a total of forty-five or sixty minutes. The treatment, consisting of one or two exposures a day, is given for three or four weeks. A spontaneous evacuation usually occurs after several sittings; then defecation becomes regular, even after the treatment is discontinued. The application should be given soon after a meal, especially in cases with coexisting atony of the stomach.

Presse Médicale, Paris

33: 1073-1088 (Aug. 12) 1925

*Results of Ovary Grafting. Tuffier and Bour.—p. 1073.
Improved Technic for Roentgen-Ray Study of Vessels. M. de Abreu.—p. 1076.

Pregnancy After Ovary Grafting or Transposition.—Tuffier and Bour analyze the experimental results and fifty cases of ovary grafting performed on women, between 18 and 30. Transposing the ovary into the uterus, with or without the vascular and nerve pedicle, exerted a very favorable action on the general condition of the women. The menses reappeared from three to five months after the operation, and persisted from five to ten years. In some cases menstruation continued without a break. The grafting may be followed by pregnancy, with normal childbirth. The only complication of the operation was mild pain preceding menstruation, noted in 50 per cent. of the cases.

33: 1089-1104 (Aug. 15) 1925

The Lesion of Rheumatic Myocarditis. Letulle and Weil.—p. 1089.
Hair-Ball in the Stomach. Ayres Netto.—p. 1092.
*Thyroid Treatment in Kidney and Heart Disease. A. Ravina.—p. 1093.

Thyroid Treatment in Kidney and Heart Disease.—Ravina concludes from his review of the literature that thyroid extract, at a daily dose of from 0.05 gm. to 1.5 gm., given for several weeks, may give excellent results in nephritis with edema and albuminuria, but without arterial hypertension. Thyroid treatment has proved effectual even in cases rebellious to other measures; also in certain heart affections, and in angina pectoris with low blood pressure.

Revue Française d'Endocrinologie, Paris

3: 145-212 (June) 1925

*The Suprarenals in Exophthalmic Goiter. Chauffard and Girot.—p. 145.
*Myxedema with Ovarian or Testicular Insufficiency. Sergent.—p. 154.
*Threshold of Hormone Saturation. V. Pettinari.—p. 163.
Case of Virilism. C. J. Parhon et al.—p. 172.

The Thyroid and the Suprarenals in Pathogenesis of Toxic Goiter.—Chauffard and Girot describe a case of exophthalmic goiter in a woman, aged 62, with coexisting pigmentation of the Addison type. A modified Ehrmann test (citrated blood from a punctured vein applied to an enucleated frog eye) elicited a positive response, the mydriasis reaction persisting for three minutes. The Goetsch skin reaction was also distinctly positive. In the second of their three cases, with less pronounced pigmentation, the induced mydriasis was manifest within one minute. The authors assert that change of the thyroid with subsequent hyperthyroidism was the first phase of the disease; hyperepinephrinemia, from exaggerated secretion of the suprarenal medulla, the second phase. This may explain the association of sympathicotonia with pigmentation, conforming to Cannon's theory of the synergic action of the suprarenals and the thyroid. Fading of the pigmentation paralleled the general improvement under roentgen-ray treatment.

Deficiency of Genital Glands in the Etiology of Myxedema.—Sergent treated a case of attenuated myxedema in a woman, 48 years old. The first manifestations of the menopause coincided with attacks of psoriasis recurring for five years. Then the psoriasis became complicated with progressive arthritis deformans. Signs of attenuated myxedema appeared in the last year, preceding death from pneumonia. Necropsy revealed considerable atrophy of the thyroid with calcification and sclerous degeneration. In another case, in a man, aged 30, an attenuated myxedema appeared shortly after gunshot destruction of the testes. The cases evidently testify to the connection of myxedema with physiologic or pathologic insufficiency of the genital glands.

The Sexual Hormones in the Grafting of Genital Tissue.—Pettinari believes that negative results of grafts of genital tissue from the other sex, observed in cases with unilateral castration, do not depend on an antagonism between the genital glands. They reveal the defense of the organism against overproduction of sexual hormones, with consecutive disturbance of the endocrine balance. As long as the threshold of hormone saturation is attained, no grafts of testicle or ovary tissue will succeed. The grafting succeeds only when the organism is in a condition of sexual hormone deficiency. The results are then the same with testicle grafts or with ovary, regardless whether the subject is male or female. Therefore an experimental hermaphrodism may be induced after castration or lesions of the genital glands. In old animals, grafting is more likely to succeed, owing to the physiologic decline of the sexual hormones.

Pediatria, Naples

33: 801-860 (Aug. 1) 1925

*Dispensary for Tuberculous Children. R. Mercurio.—p. 801.
*The Diphtheria Anatoxin Reaction. F. Redlich and A. Ronchi.—p. 813.
*Sedimentation Test in Tuberculous Children. F. D'Asaro.—p. 823.
Oriental Sore in a Breast-Fed Infant. R. Pastore.—p. 842.

Dispensary for Tuberculous Children.—Mercurio emphasizes in this report of ten years' work that tuberculin treatment for children has proved its value in his experience. Nearly 4,100 children have frequented the dispensary, and tuberculin treatment was given to 80 per cent. The doses are smaller and the course longer than the usual practice.

The Diphtheria Anatoxin Reaction.—Redlich and Ronchi tested 30 children with diphtheria, 30 with measles, 19 with scarlet fever, 24 with other diseases, and 50 new-born infants and their mothers. The anatoxin reaction seemed to be independent of the Schick reaction. The importance of the former they say, is not so much the discovery of a new reaction as that it stresses the significance of diphtheria allergy from the standpoint of the organism's defensive powers.

Sedimentation Test in Tuberculous Children.—D'Asaro's charts confirm the dependable oversight of the course which can be obtained from the variations in the speed of sedimentation of the erythrocytes under the influence of sanatorium and other treatment.

Policlinico, Rome

32: 969-1003 (July 13) 1925

Present Status of Bismuth Treatment of Syphilis. G. Giorgi.—p. 969.
Fatal Traumatic Abscess in the Brain. N. Sassone.—p. 975.
*Vitamins and Bacterial Growth. F. Tallo.—p. 979.

Influence of Vegetable Vitamins on Growth of Bacteria.—Tallo found that fresh lemon or pea juice or peanut oil materially promoted the growth of cultures of gonococci, meningococci, streptococci and other germs tested. The growth was not only ranker but the fluid kept clear.

32: 1041-1075 (July 27) 1925

Mechanism of Production of Eosinophilia. G. Cioni.—p. 1041.
Ileus from Invagination. P. Costantini.—p. 1046.
Early Radiologic Diagnosis of Pyuria. E. Pazzi.—p. 1053.

32: 1109-1142 (Aug. 10) 1925

*Reflex Connections Between Viscera. S. Solieri.—p. 1109.
Skin Lesions That Favor Localization of Syphilis. O. Cignozzi.—p. 1113.
Gummatous Form of Sporotrichosis. G. Jaja.—p. 1115.
*Elephantiasis from Industrial Accident. G. Muccini.—p. 1117.
Improved Seriograph for Roentgen Work. P. Perona.—p. 1119.

Reflex Correlations of the Viscera in the Right Abdomen.—Solieri was impressed with the reaction on the part of the stomach (pains, pylorospasm, vomiting) in the course of

operations on the appendix under intraspinal anesthesia. His experimental and other research has confirmed this "pathologic syntonia of the right abdomen." It explains the cases in which appendectomy has cured completely gastric disturbances from hyperacidity, and even a tendency to peptic ulcers in the stomach or duodenum. He cites cases to confirm the inclusion of the gallbladder in this vagosympathetic reflex arc.

Traumatic Elephantiasis.—Muccini gives an illustration of a case of elephantiasis of the genital organs and legs which developed after an industrial accident, a blow in the right inguinal region from falling lumber.

Riforma Medica, Naples

41: 673-696 (July 20) 1925

Culture Mediums for Tubercle Bacillus. A. Tarsitano.—p. 673.
*Remissions in General Paresis. G. Pellacani.—p. 675.
Specific-Nonspecific Treatment of Gonorrhea. G. Delpiano.—p. 681.

Remissions in General Paralysis.—Pellacani cites authorities to show that spontaneous remissions may be anticipated in from 5 to 11 per cent. of the cases, and Tanzi, Lugaro and Petrozzani have published instances of remissions persisting for ten to fourteen years. The remissions from malaria treatment seem to be of the same character as the spontaneous, and the statistics show up to 40 or 50 per cent. of remissions in the early stages. Similar results have also been reported from a combination of tuberculin or sodium nucleinate (for the shock fever effect) with mercury. The remission is merely an attenuation of the syndrome, but this may allow useful resumption of specific treatment.

Archivos Latino-Amer. de Pediatría, Buenos Aires

10: 713-795 (April) 1925

*Pseudoleukemic Anemia. Beretervide and Bianchi.—p. 713.
Acidosis in Children. E. Cienfuegos.—p. 744.
Papilloma of the Larynx. J. J. Leunda.—p. 761.
Heliotherapy in Brazil. Moncorvo Filho.—p. 765.

Pseudoleukemic Anemia in Young Children.—A case is described of the von Jaksch-Luzet anemia in a boy, 3 years and 6 months old, and Beretervide and Bianchi discuss the nature and classification of this disease and of the megaloblastic anemias in general. The prognosis is inevitably fatal; congenital syphilis is found in a large proportion of such cases. The main features are the pernicious reaction in the red blood corpuscles, with an embryonic reaction in the white corpuscles, accompanying the enlargement of the liver and spleen. In the case reported, the reds numbered 2,500,000 and the whites, 10,000. The first symptoms had been noted four months before, and the child died the sixth month.

Gaceta Médica de Mexico, Mexico City

56: 1-164 (May) 1925

*Vaccine Therapy in Prophylaxis of Epidemics. M. S. Iglesias.—p. 1.
*Diagnosis of Trachoma. E. F. Montaño.—p. 8.
Data for the History of Medicine in Mexico. N. León.—p. 12.
Calcium Chlorid. F. Bulman.—p. 31.
System in Physiology. Determinism in Science. E. Ramírez.—p. 44.
Basis for Estimation of Disability in Industrial Accidents. L. S. Viramontes.—p. 51.
Importance of Physical Training for the Development of the Young. A. Vallarino.—p. 65.
Prophylaxis and Treatment of Abortion. I. Espinosa de los Reyes.—p. 69. Reply. Everardo Landa.—p. 78.
Necessity for Cultivating a Critical Spirit. A. Aragón.—p. 85.
Occupational Diseases and Dangers, Especially in Textile Factories. P. Sánchez Pérez.—p. 112. Comment. A. Brioso Vasconcelos and Committee.—p. 106.

Vaccination in Prophylaxis of Epidemics.—Iglesias presents arguments to prove that when a disease has acquired a solid foothold in a place, like smallpox in many localities and like yellow fever in the last century, systematic vaccination throughout the year, to immunize the entire populace, would certainly stamp out the disease. But when vaccination is applied sporadically, only when epidemics appear, and only occasionally, the result is entirely ineffective. The system may even be distinctly harmful as it confers a feeling of false security. Vaccination should not be regarded as a prophylactic panacea against epidemic explosions.

Diagnosis of Trachoma.—Montaño emphasizes the clinical characters which render confusion liable with follicular conjunctivitis and perikeratitis. The history of the case generally reveals whether there has been contagion. The research of Kleczkowski and Karelus has supplied a basis for the biologic diagnosis, as the serum of sensitized rabbits hemolyzes completely the blood of a trachoma subject. It does not affect normal blood to the same extent. The rabbit has to be sensitized with the blood from a healthy subject. Follicular conjunctivitis attacks principally children and youths in asylums. There is never pannus in the cornea, and the granulations in the tarsal conjunctiva are rare and small, and there are no scars or deformity of the tarsus. These affections also yield readily to treatment. The perikeratoconjunctivitis, described by Carmona, is differentiated by the whitish line at the periphery of the cornea or the granulations on the lids, limited to the superior tarsal conjunctiva.

Revista Española de Medicina y Cirugía, Barcelona

8: 375-436 (July) 1925

*Fistulas Between Stomach and Skin. Trías Pujol.—p. 375.
Parkinsonian Syndrome After Epidemic Encephalitis. Cuatrecasas and de Villalta.—p. 383.
Cesarean Section with Temporary Exteriorization of the Uterus. L. Bosch Avilés and P. Puig y Roig.—p. 388.
Total Laryngectomy with Base of Flap Above. Ricardo Botey.—p. 397.
Local Immunity. A. Besredka. Comment. J. Salvat Martí.—p. 401.
Muscle Transplants. L. Ribó Rius.—p. 405.

Spontaneous Perforation of the Stomach Through the Skin.—Trías Pujol comments on a case of this kind described by J. J. Gómez a century ago, and reports six cases from his own experience in which a stomach-skin fistula developed in the course of a gastric ulcer. Complications are both local and general, inflammatory processes in and around the fistula, and stagnation of secretions and stomach contents. Metastatic abscesses in the liver or pancreas are common, and the loss of nourishment by the fistula leads to intense thirst, death occurring usually in acidosis. Two of his patients died from the progress of the underlying cancer and a third from shock after a laparotomy, the enormous ulcer involving the liver and the pancreas as well as the stomach so that removal was out of the question. In Gomez' case, in 1820, operation and necropsy were refused, but he persuaded the mayor, the pharmacist and the priest to aid him in exhuming the cadaver in the cause of science.

Revista Médica Latino-Amer., Buenos Aires

10: 885-977 (May) 1925

Bone Tuberculosis. L. A. Tamini.—p. 885.
*Exophthalmic Goiter. E. M. Olivieri.—p. 894.
Technic for Duodenojejunostomy. R. E. Donovan.—p. 897.
*Syphilis of the Liver. A. Quijano O.—p. 904.
*Acute Colon Bacillus Mastoiditis. E. Casterán.—p. 910.
Skin Diseases. A. Pasqualis Politi.—p. 913. Cont'n.

Treatment of Toxic Goiter.—Olivieri advocates ligation of the thyroid arteries or partial resection for most cases of exophthalmic goiter requiring intervention. But when the condition is too grave for this, he applies the American method of injection of 10 c.c. of boiling water in each lobe alternately, at weekly intervals. He has applied this in large numbers of cases. In some this alone sufficed for a practical cure. In others it improved conditions until resection was possible.

Syphilis of the Liver.—Quijano insists on the necessity for treatment as for syphilis in all cases of cirrhosis of the liver, as it is impossible to exclude syphilis otherwise, and this alone may cure. The renal functioning should be tested, and fluids and salt restricted as indicated. In a case described, the ascites, edema, hydrothorax, subjaundice, insomnia and digestive disturbances subsided in a week of mercurial treatment with restriction of fluids and of salt.

Acute Mastoiditis.—The suppuration continued after two operations on the mastoid and perfect drainage. The colon bacillus was found in the pus. Prompt improvement and soon a permanent cure followed an anticolon bacillus vaccine therapy.

Deutsches Archiv für klinische Medizin, Leipzig

148: 1-128 (July) 1925

*Blood Sugar in Pernicious Anemia. Meulengracht and Iversen.—p. 1.
*Diazo and Urochromogen Reactions in Blood Filtrate. Becher.—p. 10.
Perforated Ulcers. J. P. de Bruine Plocs van Amstel.—p. 19.
*Chromogens in Granular Atrophy of the Kidney. E. Becher.—p. 46.
Microscopic Examination of Capillaries. F. Lange.—p. 58.
Vasoneurotic Skin Changes. R. Mayer-List.—p. 67.
*Uremia and Renal Insufficiency. E. Becher and F. Koch.—p. 78.
*Experimental Studies on Meteorism. R. Schoen.—p. 86.
Blood Pressure in the Elderly. A. Richter.—p. 111.
Auscultation Phenomena in Mitral Stenosis. W. Nonnenbruch.—p. 121.

The Blood Sugar in Pernicious Anemia.—Meulengracht and Iversen found that in pernicious anemia the blood sugar may be increased, but they do not believe that this condition is dependent on the anemia.

The Diazo and the Urochromogen Reaction in Renal Insufficiency.—The filtrate obtained after deproteinizing the blood with trichloracetic acid gives a distinct diazo and a urochromogen reaction in cases of severe renal insufficiency. Becher believes that these reactions are caused by aromatic oxyacids and by oxyproteinic acids.

Chromogens in the Serum and Urine in Renal Insufficiency.—In patients with severe renal insufficiency, urochromogen and other chromogens are found in the serum and in the urine. The appearance of these substances in the blood parallels the retention of indican, phenol, etc. Becher believes that the light color of the urine from these patients is due partly to the retention of chromogens in the blood and in the tissues, and partly to an inability of the kidney to oxidize these propigments to pigments.

The Pathogenic Significance of Retained Substances and True Uremia.—In renal insufficiency a parallelism exists between the retention of phenol bodies (phenol, cresol, diphenols and aromatic oxyacids) and the appearance of true uremic symptoms. Uremia is much less dependent on the retention of protein cleavage products. Since phenol poisoning resembles true uremia, Becher and Koch believe that the phenol derivatives play an important rôle in the pathogenesis of uremia.

Experimental Studies on Meteorism.—Schoen studied resorption and diffusion of various gases in ligated loops of intestine in dogs. Carbon dioxid is resorbed in a few minutes, oxygen considerably slower, and hydrogen and nitrogen not at all in the course of several hours. The resorption is slower in the colon than in the small intestine. The speed of resorption of carbon dioxid is much dependent on the condition of the intestinal wall. Inflammation has no influence; circulatory disturbances have an inhibiting action. If the muscular tonicity is increased by pilocarpin, the speed of resorption is greater. After atropin, which leads to a decrease in the muscular tonicity, the resorption is much slower. Schoen discusses the clinical significance of these experimental findings.

Deutsche medizinische Wochenschrift, Leipzig

51: 1305-1346 (Aug. 7) 1925

Remarks on Gye's Paper on Cancer. F. Blumenthal.—p. 1305.
*Tumors and Bacilli. F. Reichert.—p. 1306.
Autotransfusions Plus Roentgen Ray. Tenckhoff.—p. 1308.
The Unity of Streptococci and Pneumococci. E. Berger and B. Engelmann.—p. 1317.
*The Specific Diagnosis of Echinococcus Infections. G. Deusch.—p. 1319.
Relieving Pain. H. Handovsky and R. Seyderhelm.—p. 1320.
Treatment of Diphtheric Stenosis of the Larynx. J. Kaiser.—p. 1323.
The Drainage of Douglas' Pouch. Regge.—p. 1324.
Heart Sounds in Loud Speakers. L. Jacobsohn.—p. 1324.
Orthopedics. H. Debrunner.—p. 1325.
Care of the Mentally Deficient. Waetzoldt.—p. 1326.

Tumors and Bacilli.—Reichert has made studies with the bacillus P. M. which has been isolated by Blumenthal. Rat tumors which have been produced by the simultaneous injection of this bacillus and kieselguhr were transplanted into other rats. In 40 per cent. of the animals the transplantation was successful. It was found that a second transplantation into the same animal frequently led to the development of the first transplant. Reichert proved anew that these tumors grow rapidly, that they metastasize, and that they grow destructively with infiltration. The bacillus P. M. is identical with Smith's *Bacillus tumefaciens*. Since Blumenthal succeeded in isolating a number of different strains from human malignant tumors, the author queries whether these bacilli are really the etiologic factors or whether a uniform ultravirus which lives in symbiosis with these different bacilli may not be the causative agent.

The Specific Diagnosis of Echinococcus Infection.—Deusch states that the intracutaneous injection of hydatid fluid is the most reliable means in the diagnosis of echinococcus infections, and much more dependable than the complement-fixation reaction. The reaction remains positive, however, for a long time after the surgical removal of the cysts.

Klinische Wochenschrift, Berlin

4: 1577-1624 (Aug. 13) 1925

Manic Depressive Insanity. J. Lange.—p. 1577.
Vegetative Nerve System and the Environment. F. Glaser.—p. 1580.
*The Pyocyaneus Bacteriophage. K. L. Pesch and C. Sonnenschein.—p. 1585.
Comparative Pathology of Vascular Diseases. C. Hirsch.—p. 1586.
*Anemia in Splenectomized Rats. E. Lauda.—p. 1587.
*Extramedullary Tumors. J. Erdélyi.—p. 1591.
The Water Pump for Withdrawing Exudates. J. Flesch.—p. 1593.
*Blood Sugar in Pulmonary Tuberculosis. P. Hecht.—p. 1595.
Paravertebral Anesthesia as a Medical Measure. Freude and Kanellis.—p. 1597.
"Blood Chemistry After Stimulation of the Pneumogastric Nerve." H. Vollmer.—p. 1599.
The Electrocardiogram in the Frog. S. de Boer.—p. 1599.
Shifting of Electrolytes Between Tissues and Blood. Behrendt.—p. 1600.
Percutaneous Electrosmosis or Iontophoresis? H. Rein.—p. 1601.
Dispensaries for Infants. H. Nothmann.—p. 1605.

Studies on Pyocyaneus Bacilli.—Pyocyaneus bacilli grow with spots of a metallic luster. Pesch and Sonnenschein have isolated from sixteen different strains bacilli which do not develop these glossy spots, and which never revert to the original type. This new type of bacilli is identical with *Bacterium fluorescens liquefaciens*. Bacteriophages may be found in either type; but the glossy spots in the cultures are not due to the bacteriophage.

Pernicious Anemia of Rats.—Lauda observed that a large percentage of splenectomized rats developed a severe anemia, which displayed a hematologic picture very much like that of pernicious anemia in man. But megaloblasts were never found, and the granulocytes were increased and many pathologic forms were found. Phagocytosis of erythrocytes in the circulating blood was frequently observed. The Kupffer cells were enlarged and they had phagocyted large numbers of red cells. The liver cells regularly presented fatty degeneration. Lauda showed that splenectomized rats which do not develop this condition will develop the same disease after injection of the liver substance of diseased rats. He believes that the etiology of this disease is an endogenous infection which can work only after the removal of the spleen. Only if very large doses of diseased liver tissue are injected into normal rats is it possible to produce the same disease.

Vertebral Exostoses Coincident with Spinal Tumors Elsewhere than in the Cord.—Erdélyi has observed that extramedullary tumors frequently cause exostoses on vertebrae near the site of the tumor. He believes that they are caused by chronic inflammation and venous stasis in the surroundings of the tumor.

Blood Sugar in Pulmonary Tuberculosis.—Hecht found that the majority of patients with advanced pulmonary tuberculosis have subnormal values of blood sugar.

Medizinische Klinik, Berlin

21: 1181-1218 (Aug. 7) 1925

Bronchial Asthma. F. Klewitz.—p. 1181.
The Elements of Embryology. O. Grosser.—p. 1185.
Burns. K. Schreiner.—p. 1187. Cont'd.
Dercum's Disease. W. Jülich.—p. 1189.
Weakly Children. F. Weiss.—p. 1192.
Non-Specific Tuberculin Reactions. G. Singer.—p. 1195.
Intermittent Pseudoneurasthenia. Klein.—p. 1196. Conc'n.
*Bacillus Coli in Pernicious Anemia. F. Lucksch.—p. 1200.
The Action of Pyridin and Hydrocyanic Acid on the Blood Pigment. R. Zeynek.—p. 1201.
Cesarean Section. F. Eberhart.—p. 1204. Cont'd.
A Survey of Recent Urologic Work. R. Paschkis.—p. 1205.
Mercurochrome in Therapy. von Schnizer.—p. 1207.
Gye's Theory on Cancer. K. Brandenburg.—p. 1216.

The Colon Bacillus in Pernicious Anemia.—Lucksch reports that the majority of *B. coli* strains which were isolated from patients with pernicious anemia had the same morphologic and cultural characteristics as those *B. coli* strains that are immune against the action of the bacteriophage.

Mitteil. a. d. Grenzgeb. der Med. und Chir., Jena

38: 441-566, 1925

Case of Hypernephroma with Pararenal Hemorrhage. H. Kunz.—p. 441.
*Protein Therapy in Peptic Ulcers. H. Marx.—p. 447.
Phlegmonous Colitis. O. Teutschlaender and B. Valentin.—p. 469.
Two Cases of Nontuberculous Spondylitis. E. Lyon.—p. 481.
*Nonprotein Nitrogen in Experimental Tetany. O. W.-Florin.—p. 489.
*Healing of Wounds. L. Schönbauer and L. R. Whitaker.—p. 500.
Roentgen Ray Treatment in Postoperative Pneumonia. Kaess.—p. 509.
Cerebral Tumors. L. Schönbauer.—p. 516.
Spastic Conditions with Gastric Ulcers. W. Budde.—p. 525.
Pancreas Tissue in the Pylorus. H. Münch.—p. 538.
Pneumothorax Treatment in Acute Empyema. H. Elias.—p. 543.
Grevé's Test for Tumors. P. Rostock.—p. 550.
Adhesive Pericarditis. A. Grote.—p. 556.

Nonspecific Protein Therapy in Peptic Ulcers.—Histologic study of the ulcers did not reveal any curative effect from the protein therapy on peptic ulcers. Marx believes that inflammatory reactions are not a factor in the healing of ulcers, and he did not find any conclusive relation between those reactions and the therapeutic attempts. In the majority of cases he found a local eosinophilia, which may be considered as a result of the protein therapy.

The Nonprotein Nitrogen in Tetany.—Florin found after removal of the thyroid and the parathyroids in ten dogs, that the nonprotein nitrogen was always increased, proportionately parallel to the severity of the tetany symptoms. Calcium chlorid relieved the tetanic symptoms and decreased the nonprotein nitrogen. The urea nitrogen was decreased in tetany; consequently the increase of the nonprotein nitrogen is due to incompletely oxidized protein cleavage products.

The Influence of the Sympathetic Nervous System on Healing of Wounds.—Schönbauer and Whitaker demonstrated on seventeen dogs that traumatic wounds of the gastric mucous membrane healed more rapidly when sympathectomy was performed simultaneously with the trauma.

Münchener medizinische Wochenschrift, Munich

72: 1319-1366 (Aug. 7) 1925

The Viscosity of the Blood. C. Hirsch.—p. 1319.
The Chemistry of Pathologic Conditions. G. Hoppe-Seyler.—p. 1321.
Dermatitis Caused by Adhesive. H. W. Siemens.—p. 1323.
Apparatus Combining Nephelometer and Colorimeter. H. Dold.—p. 1325.
*Postoperative Anuria. T. Brunner.—p. 1326.
The Duodenal Ether Reflex. F. Rabe.—p. 1329.
Anomalies of the Bile Ducts. M. Budde.—p. 1330.
Studies in Fränkel's Edema Bacillus. Weigmann.—p. 1332.
Exercise in Respiration. Hörnicke.—p. 1332.
*Impacted Wisdom Teeth. Determann.—p. 1336.
Illuminating Gas Poisoning in Infants. Müller.—p. 1337.
*Ponndorf Vaccination. Langemak.—p. 1338.
Treatment of Gonorrhea. Löwensohn.—p. 1341.
Treatment of Enuresis. Ochsenius.—p. 1342.
Treatment of Suppurative Processes. M. Bischoff.—p. 1342.
Abortion from a Legal and Social Point of View. Hoeber.—p. 1344.
The Hygienic Exposition at Düsseldorf in 1926. M. Fraenkel.—p. 1349.

Postoperative Anuria.—Brunner advocates the intravenous injection of a 40 per cent. hexamethylentetramin solution (average dose, 5 c.c.) as a successful and harmless treatment in postoperative anuria.

Impacted Wisdom Teeth.—Determann reports a case of severe general nervous disturbances which was apparently caused by a wisdom tooth which was impacted and which exerted continuous pressure upon the inferior alveolar nerve. The extraction of the tooth brought about complete cure.

Ponndorf Vaccination.—In the last four years, Langemak has used the Ponndorf method of tuberculin vaccination in 865 cases, for the treatment of various diseases. He believes that he achieved very good results in tuberculosis of the testes, in erysipelas, in acute rheumatic arthritis and in acute attacks of gout.

72: 1367-1408 (Aug. 14) 1925

Arteriosclerosis. W. Frey.—p. 1367.
*Recurring Appendicitis. Düttmann.—p. 1370.
A "Hemogram Laboratory." G. Ockel.—p. 1372.
*Roentgen-Ray Diagnosis of Chronic Arthritis. Krebs.—p. 1375.
*Fontana's Method for Staining Spirochetes. W. Krantz.—p. 1377.
Poisoning with Arsin. H. Gerbis.—p. 1378.
Progress in Epidemiology. F. Wolter.—p. 1380.
Treatment of Climacteric Disturbances. F. A. Lehmann.—p. 1382.
*Spontaneous Rupture of the Gastro-Epiploic Artery. M. Budde.—p. 1383.
Transmission of Syphilis to Grandchildren. Vanselow.—p. 1384.
The Clinical Lecture. T. Rumpf.—p. 1385.
Treatment of Compound Fractures. A. Krecke.—p. 1387.
The Care of Run-Down Children. O. Schneider.—p. 1389.

Recurring Appendicitis.—After an appendicitic abscess has been incised, a new appendicitic attack occurs frequently. It is therefore necessary not only to incise the abscess but also to remove the appendix. Düttmann advocates as the method of choice the two-stage operation. The second stage should include a laparoplastic operation to prevent or cure a hernia in the operative scar of the first operation.

Chronic Arthritis.—Krebs emphasizes the frequency of chronic inflammation in muscles and tendons surrounding the joints. The differential roentgen-ray diagnosis is thoroughly discussed.

Fontana's Method.—Krantz publishes a modification of Fontana's method for the detection of spirochetes in tissue sections. The sections stained by the new method do not fade in the light.

Spontaneous Rupture of Gastro-Epiploic Artery.—A man, 23 years of age, became suddenly ill with violent pains in the abdomen. He had never been sick before, and had a negative Wassermann. He was operated on the following day; a perforated ulcer or acute fat necrosis of the pancreas was suspected. Budde found that he had a rupture of a branch of the left gastro-epiploic artery. The artery was ligated, and the patient recovered fully. There had been no trauma before the attack of pains.

Zeitschrift für Kinderheilkunde, Berlin

39: 465-644 (July 24) 1925

*The Bordet-Gengou Bacillus in Pertussis. Bachmann and Burghard.—p. 465.
Prognosis of Tuberculosis in Children. E. Nassau and H. Zweig.—p. 484.
Dystrophia in Early Childhood. L. Landé.—p. 495.
*Scarlet Fever, Measles and Chickenpox. Nasso and Laurinsich.—p. 516.
*Scarlet Fever and Vegetative System. Block and Koenigsberger.—p. 536.
Nevi in Univitelline Twins. Bardach.—p. 542. Comment. Siemens.—p. 551.
Contribution to Clinical Hematology in Infants. E. Stransky.—p. 553.
Intolerance for Cow's Milk in Infant with Purpura. Landsberger.—p. 569.
Endocrine Dwarfism. L. A. Kwint.—p. 575.
The Formation of Ammonia in Infants. M. Landsberger.—p. 586.
Excretion of Organic Acids in Infants' Urine. Landsberger.—p. 597.
The Influence of Ions on Diuresis in Infants. E. Freudenberg.—p. 608.
Muscular Hyperirritability in Infants. F. Demuth.—p. 613.
The Nonsaponifying Substances in Cod Liver Oil. Behrendt.—p. 619.
Resorcin in Treatment of Children. O. Connerth.—p. 628.
Medicosocial Studies on Children Fed in Public Kitchens. S. Weissenberg.—p. 634.

The Bordet-Gengou Bacilli and Pertussis.—Bachmann and Burghard found that the Bordet-Gengou bacilli produce almost regularly a fatal bacteremia in mice after peritoneal injection. This pathogenicity distinguishes them from influenza bacilli, from which they cannot be differentiated by any cultural or serologic methods. Although their etiologic rôle was not established, these bacilli were found regularly in pertussis, especially in the early stage, even before the onset of the typical clinical symptoms. Their virulence for mice paralleled the severity of the case of whooping cough from which they were isolated.

The Etiology of Scarlet Fever, Measles and Chickenpox.—Nasso and Laurinsich (of Naples) have continued and elaborated Di Cristina's studies. They believe that the Di Cristina bodies are the causative organisms for those diseases indicated in the title. All three organisms are culturally, serologically and biologically strictly specific. The authors report positive results in the infection of rabbits and in two cases in children, who had been infected with the measles culture.

Scarlet Fever and the Vegetative Nervous System.—Block and Koenigsberger found that children with scarlet fever displayed a vagotonic reaction to epinephrin injection. They conclude that the vagotonic type is predisposed to scarlet fever.

Zentralblatt für Chirurgie, Leipzig

52: 1761-1808 (Aug. 8) 1925

Acute Abdominal Disease. Paul Esau.—p. 1762.
Operation for Arteriovenous Aneurysm. J. Hohlbaum.—p. 1764.
Babcock's Operation on Varicose Veins. Hosemann.—p. 1765.
A Splint for Fractures of the Femur and Leg. R. Demel.—p. 1766.
A Splint for Arm Fractures. B. Chatzkelsohn.—p. 1773.
Roentgenoscopy at the Bedside. M. Sgalitzer.—p. 1778.
Radical Operation for Hemorrhoids. Kinscherf.—p. 1782.

Zentralblatt für Gynäkologie, Leipzig

49: 1793-1840 (Aug. 8) 1925

Industrial Dangers for Pregnant Women. M. Hirsch.—p. 1793.
Central Rupture of the Cervix. B. Ottow.—p. 1803.
Knee Presentation. W. Odenthal.—p. 1814.
*Spasmophilia and Pregnancy. C. Merletti.—p. 1816.
Epilepsy in Women. H. Heberer.—p. 1824.

Spasmophilia and Pregnancy.—Merletti observed in some pregnant women a mechanical and electric hyperirritability, which predisposes to localized and universal spasms. The altered conditions in pregnancy may make this predisposition manifest.

Zentralblatt für innere Medizin, Leipzig

46: 737-768 (Aug. 8) 1925

Brief Spontaneous Variations of the Systolic Blood Pressure. L. Hahn.—p. 738.

Prophylaktitcheskaia Medicina, Charkoff

6: 1-192 (June) 1925. Partial Index

Control of Drinking Water. L. Gorovitz-Vlasova.—p. 1.
*Scarlet Fever Toxin and Dick Test. Rosen and Korobitzina.—p. 9.
Search for Helminth Ova in Stools. G. Vitenberg.—p. 19.
Influence of Mental Work on Weight and Muscular Strength. S. Popoff.—p. 71.

A Scarlet Fever Toxin for the Dick Test.—Rosen and Korobitzina report the results of the Dick test, made with their special toxin in 377 cases, the injections repeated the second or the third day. In many cases the reaction faded on the second day; in 3.7 per cent. it appeared more pronounced on the third day. Sixty children were injected with the Dick toxin and sixty with the authors' toxin. With the Dick toxin a positive reaction occurred in 50 per cent. of the cases; with their toxin in 48 per cent. The test, made in 133 scarlet fever patients, showed a positive reaction in the first days of the disease in 82.5 per cent.; and in 18.2 per cent. of the convalescents. Of 14 persons with a scarlet fever history, the Dick test was positive in only 2, the interval since the scarlet fever twenty and thirty-five years. Of 600 children with a positive or combined Dick reaction, 4 developed scarlet fever, but none of the 600 children with a negative reaction. Positive reactions in scarlet fever patients decreased proportional to the day of the disease. Their results with the Dick test, compared with those of Zingher, indicated a smaller number of positive reactions in the first days of the disease, and a greater in convalescents. The rate of positive reactions in the healthy was higher than that given by Zingher. Their findings confirmed also the connection between the age of the subjects and the number of positive reactions. The authors assert that the action of their toxin seems to be identical with that of the Dick toxin, but the nonspecific irritation with it is more marked. They describe the method of preparation.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

2: 213-324 (July 11) 1925

*Valvular Heart Disease in the East Indies. A. E. Sitsen.—p. 222.
*Vital Staining of the Eyes. E. Marx.—p. 234.
Structure of the Living Cell. F. de Moulin.—p. 241.
Comparison of Malaria Death Rate in Italy and the Netherlands. N. H. Swellengrebel.—p. 247.
An Accessory Tube in Case of Tubal Pregnancy. F. C. van Tongeren.—p. 257.

Valvular Disease in East Indies.—Sitsen analyzes nineteen cases of endocarditis (in 2,810 necropsies), and comments on the rarity of syphilitic aortitis in the natives of the Dutch East Indies in comparison to Europeans. He suggests that, if functional strain is an important factor, the lower blood pressure of the natives may explain the rarity of this localization of syphilis. Articular rheumatism is rare in the Indies.

Vital Staining of the Eye.—Marx concludes his experiments and clinical study of this subject with the suggestion that it might be possible to enhance the action of actinic rays on the eye by vital staining. The halogen derivatives of fluorescein (bengal red) are said to render the tissues more susceptible to radiant energy, and this might be utilized in treatment of rebellious phlyctenas. The stain seems to affect electively the special points where phlyctenas develop.

2: 325-443 (July 18) 1925

*The Mind in Aphasia. D. Wiersma.—p. 326.
Influence of Purity of Insulin on Its Action. S. E. de Jongh and E. Laqueur.—p. 330.
*Scoliosis in Young Children. R. J. Harrenstein.—p. 339.
Advantages of U Tube for Typhoid Cultures. H. J. M. Plantenga.—p. 347.
Radiography of the Lacrimal Passages with Iodized Oil. J. van der Hoeve and J. D. Steenhuis.—p. 349.
A Fatal Menstrual Hemorrhage at Age of 16. D. van Vugt.—p. 352.
A Primary Sarcoma of the Knee. C. van Luijt.—p. 356.

Psychologic Elements in General Paresis and Motor Aphasia.—Wiersma presents evidence to confirm the influence of emotional conditions on ataxic aphasia. This indicates the necessity for psychologic treatment, and he declares that this applies also to general paresis. During exacerbations of the latter, association tests reveal that the disease process in the mind as well as in the body is being aggravated.

Necessity for Early Detection and Correction of Rachitic Curvature of the Spine.—Harrenstein protests against the current opinion that the young child will outgrow the slight scoliosis. It is an easy matter to correct it in its incipiency by having the child lie in a plaster bed which exerts pressure on the protruding portion of the ribs. This protrusion of the ribs on one side is the sign of danger. Without it, expectant treatment may be justified. The plaster bed treatment is accepted by the parents and is properly applied much more easily when the child is still in arms. When it is old enough to run around, the correction is more difficult for a number of reasons. He alternates the reclining in the plaster bed with prone reclining, the child's arms fastened so it can raise only its head. This exercises the muscles. In six cases systematically treated, three have been entirely cured, and in three roentgenoscopy alone reveals a slight persistence of the scoliosis. Nine other children are still under treatment or the parents have abandoned it, but the results already obtained confirm the wisdom of the procedure. This is especially emphasized by the progressively grave condition of certain other children whose parents could not be persuaded of the necessity for systematic treatment.

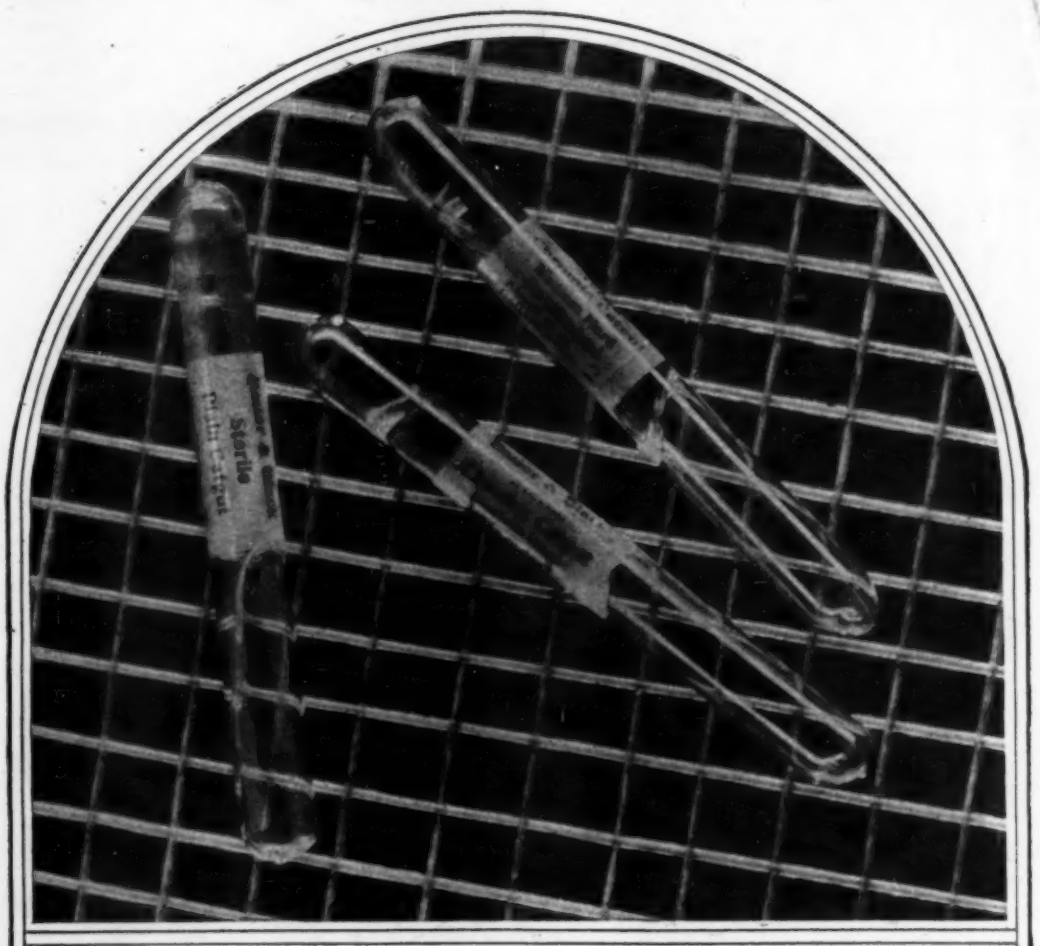
Hospitalstidende, Copenhagen

68: 529-552 (June 11) 1925

*Pneumococcus Infection of the Eye. Lundsgaard.—p. 529. Conc'n. p. 553.
*Hemolytic Jaundice with Striatal Symptoms. Munch-Petersen.—p. 546.

Pneumococcus Infection of the Eye.—Lundsgaard's research revealed pneumococci in 5 per cent. of normal eyes at all ages, with 11 per cent. in the elderly. This is important in prophylaxis, especially as vaccine and serotherapy have proved disappointing. The main reliance is on ethylhydrocuprein in ulcus serpens and to ward off postoperative infection, but it is a dangerous weapon, he says. It is valuable for superficial ulcus serpens but not for the deep. He paints the ulcer cautiously with a 2 per cent. solution about three times a day. With beginning infiltration, he increases the strength to 5 per cent. but warns that this may entail iritis if kept up too long. With established postoperative infection, the drug is of no use, and it is not needed for acute conjunctivitis.

Case of Hemolytic Jaundice with Striatal Symptoms.—A sister had hemolytic jaundice which had been apparently cured by splenectomy, but removal of the much enlarged spleen did not seem to benefit the hemolytic jaundice or the attacks of striatal symptoms in Petersen's patient. The young woman had been healthy until the age of 18. The thyroid was enlarged but there were no symptoms—apart from the hemolysis—indicating malfunction of the liver, as in Wilson's disease. The correlation in this case may have been between the spleen and the corpus striatum.



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